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**DUWAMISH WATERWAY  
SEDIMENT CHARACTERIZATION  
STUDY REPORT**

Prepared for

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## **EXECUTIVE SUMMARY**

In 1997, the Natural Resource Trustees for the Duwamish River initiated an investigation to evaluate the extent and severity of polychlorinated biphenyl (PCB) and polychlorinated terphenyl (PCT) contamination in the sediments of the Duwamish Waterway. As the first step in evaluating the ecological health of the Duwamish River, the Trustees designed a sediment sampling program for the Waterway. The purpose of this report is to provide a summary and analysis of the data generated in the sediment study.

The major findings of this sediment characterization study are given below:

- Almost 71 acres of the sampled area of the Waterway, or just under 20%, are estimated to have PCB contaminant levels that exceed the Washington State Sediment Quality Standard (SQS) – an effects-based guideline for investigating the potential for biological effects.
- The most contaminated region is the middle portion of the Waterway, north of Slip 6 and south of Slip 2.
- Seventeen of 18 samples collected from within Slip 4 exceeded the SQS for PCBs.
- Concentrations of PCBs at many sample points in the middle portion of the Waterway are 10 to 100 times the Washington State SQS.
- Based on published studies of the exposure, uptake, and bioaccumulation of PCBs by organisms, the quantity and concentrations of PCBs found in Duwamish Waterway sediments are potentially sufficient to cause injuries to natural resources.

## **ACKNOWLEDGEMENTS**

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## 1.0 INTRODUCTION

In 1997, the Natural Resource Trustees for the Duwamish River initiated an investigation to evaluate the extent and severity of polychlorinated biphenyl (PCB) and polychlorinated terphenyl (PCT) contamination in the sediments of the Duwamish Waterway.<sup>1</sup> The Trustees initiated this investigation because a review of sediment data from the Waterway indicated the presence of PCBs at concentrations known to cause harm to organisms. The existing data, however, were not sufficient to make quantitative determinations regarding the effects on natural resources and the potential for restoration. Accordingly, the Trustees determined that additional study was necessary to further understand the nature and extent of contamination within the Duwamish Waterway.

As a first step in evaluating the ecological health of the Duwamish River, the Trustees designed a sediment sampling program for the Waterway (NOAA, 1997). The objectives of the sampling program included establishing the spatial distribution of PCB and PCT contamination, evaluating potential effects to natural resources, and obtaining preliminary insight into the distribution patterns of PCB mixtures. Sediment samples for the sampling program were collected between September and November of 1997, and the Trustees received validated chemistry results in April of 1998. The resultant data set contains information on 328 sediment samples and the associated chemical analyses for total PCBs, 15 PCB congeners (compounds with unique molecular structures), total PCTs, total organic carbon (TOC), and grain size.

The Duwamish Waterway Sediment Characterization Study was designed to analyze and interpret the results of the sediment sampling program. This report presents the results of the Study objectives given below:

- 1) Characterize the nature and extent of PCB and PCT contamination in the study area;
- 2) Evaluate potential natural resource effects based on PCB contamination in sediments;
- 3) Report analytical chemistry data and qualifying information derived from the sediment investigation.

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<sup>1</sup> The Trustees of the natural resources of the Duwamish River and Elliott Bay include the Director of the State of Washington Department of Ecology, the Secretary of the United States Department of Commerce (acting through NOAA), the Muckleshoot Indian Tribe, the Suquamish Indian Tribe, and the Secretary of the United States Department of the Interior (acting through the U.S. Fish and Wildlife Service).

## **1.1 STUDY ORGANIZATION**

The remainder of this introductory section provides descriptions of the general characteristics of the Duwamish Waterway study area and reviews the nature of PCB and PCT contamination for those readers unfamiliar with these topics.

Section 2 presents an overview of the sampling design and the field implementation of that design that provide the data and the statistical framework for the analyses included in this report. This section also includes brief comments on the data set, quality assurance procedures, and analytical methods.

Section 3 presents an examination of the extent and severity of PCB contamination in the Duwamish Waterway, an assessment of the potential effects to natural resources based on a comparison of PCB concentrations to established guidelines, and the results of a preliminary analysis of congener compositions for selected samples.

Appendix A presents the analytical chemistry and sample location data for the 328 samples collected by the Trustees. Appendix B contains the data validation report for the chemistry analysis. Appendix C provides information with which to rectify sample locations with respect to their intended sampling region.

## **1.2 DESCRIPTION OF THE STUDY AREA**

The Duwamish River is located south of Seattle, Washington, originating at the confluence of the Black and Green Rivers (approximately river km 19) and flowing north to its terminus at Elliott Bay (Figure 1-1). The Duwamish River is a salt-wedge estuarine system that is heavily influenced by tides. Downstream flow is primarily controlled by releases at the Howard Hanson Dam and diversions from the Green River. The average annual freshwater flow (1962 to 1994) in the river is 1,327 cubic feet per second (cfs) measured at a U.S. Geological Survey (USGS) gauging station at Auburn (USGS, 1997). Flow rates vary from a record high 11,600 cfs to a low of 152 cfs. Peak discharges generally occur from December through February as a result of seasonal precipitation, with secondary peaks during spring snowmelt. Flow rates reach their lowest point in late summer and fall.

The lower portion of the Duwamish River, referred to as the Duwamish Waterway, begins at the upper turning basin (Turning Basin #3) and extends six miles north, discharging into Elliott Bay through the East and West Waterways. A dredged navigation channel bordered by intertidal and subtidal habitats extends up the entire length of the Waterway. The shoreline within the Waterway is highly developed, consisting of industrial, commercial, and limited residential use. The shoreline is also characterized by riprap, sheet pilings, miscellaneous fill materials, and concrete and wooden bulkheads (Weston, 1997; Tanner, 1991).

The Trustees' investigation focuses on the Duwamish Waterway and the area immediately upstream of the dredged channel. The study area's upstream boundary is located 1.5 km south of Turning Basin #3. The downstream boundary is defined as the southern tip of Harbor Island. As the study area is, in large part, concentrated on the

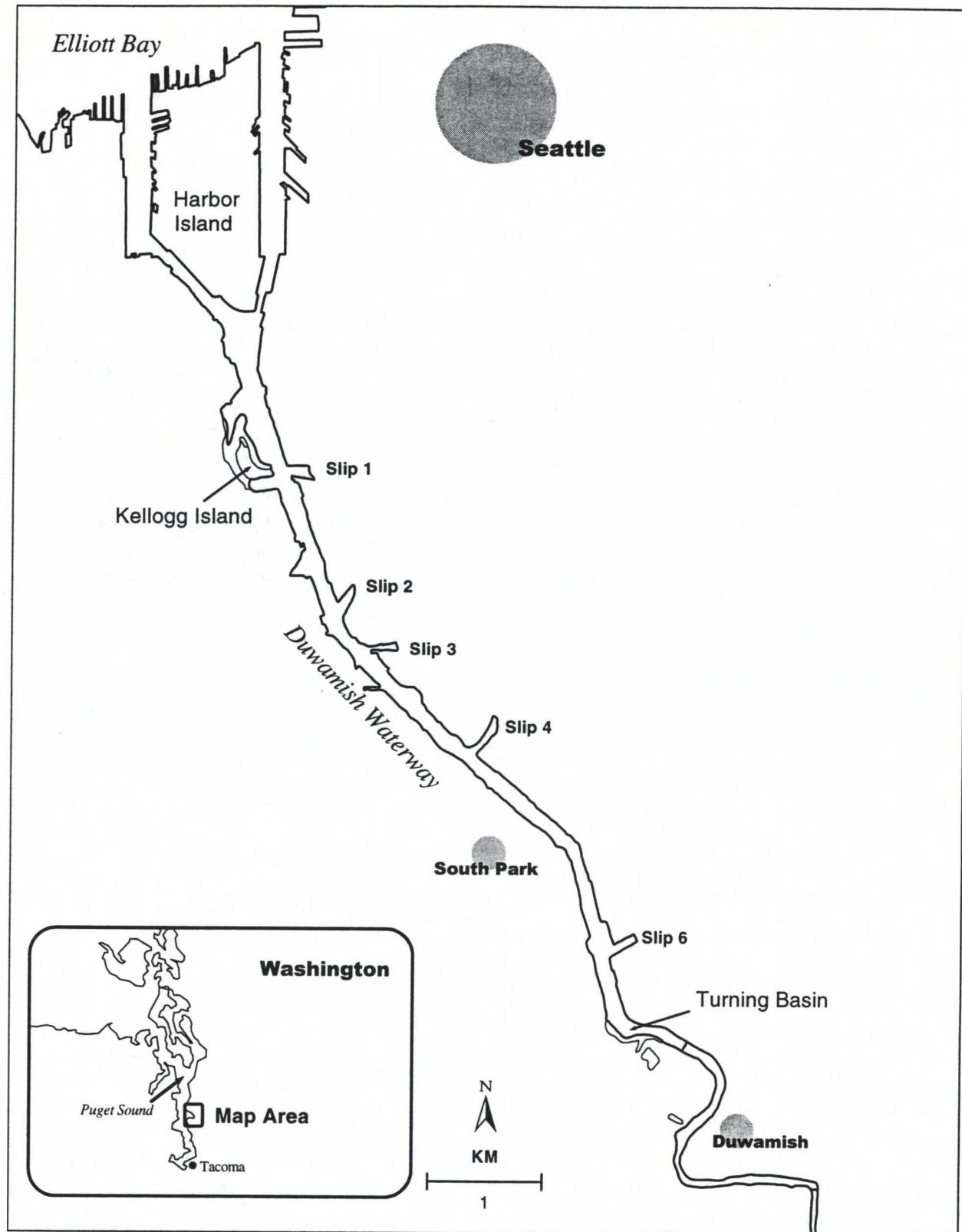


Figure 1-1. Features of the Duwamish Waterway

Duwamish Waterway, for simplicity in this report, the region of the Duwamish River included in this study is referred to as the *Duwamish Waterway*. The entire study area consists of approximately 350 acres.

The Duwamish River is an important habitat for more than 50 fish species, including chum, chinook, and coho salmon, and steelhead (Warner, 1996). Three salmon hatcheries within the Green/Duwamish River system release approximately 10 million juvenile salmon each year, and the river and its tributaries support a natural salmon run of an equal or larger amount. The river and surrounding habitat also support more than 80 species of birds and nine species of mammals (USFWS, 1996); a bird sanctuary has been established on Kellogg Island. The river supports recreational, subsistence, ceremonial, and commercial fishing. PCB releases have resulted in contamination in usual and accustomed fishing areas in which the Muckleshoot Tribe and Suquamish Tribe exercise federally adjudicated rights.

### 1.3 CONTAMINANT REVIEW

In the United States, the manufacture of PCBs and PCTs began in the late 1920s and continued until 1971 when production was voluntarily terminated due to concern over potential toxic effects and resistance to chemical and biological breakdown. After 1971, foreign producers continued to export PCBs and PCTs to the United States through 1979. In the United States, environmental concerns led to a formal ban on the manufacture of PCBs in 1979 (Erickson, 1997). However, due to their wide application and long-term persistence, PCBs and PCTs remain worldwide environmental pollutants that still exist in many industrial applications.

PCBs are a group of synthetic organic compounds formed from chlorine substitution in the biphenyl molecule. There are 209 unique congeners, distinguished by the number and position of the chlorine atoms on two connected benzene rings. PCBs were manufactured and distributed as specified mixtures of congeners called Aroclors™. PCBs were rapidly adopted in the electric power and electronics industries as dielectric materials in transformers and capacitors. PCBs also were used as hydraulic fluids and plasticizers. Between 1929 and 1989, total world production of PCBs (excluding the Soviet Union) was approximately 1.5 million metric tons. Approximately 30 to 70 percent of all PCBs are still being used, while as much as 30 percent may reside in landfills, storage, or in the sediments of lakes, rivers, and estuaries. Global budgets of PCBs are sufficiently imprecise that the fate of as much as 30 percent of all PCBs (approximately  $4.5 \times 10^8$  kg) may be unknown (Thomas and Colborn, 1992).

PCTs have physical and chemical properties similar to those of PCBs. Theoretically, 8,149 PCT congeners are possible from the chlorination of the three phenyl rings of the terphenyl molecule. PCTs have many of the same applications as PCBs, although in the United States the primary uses include investment casting and plasticizer applications. Between 1959 and 1972, worldwide PCT production exceeded 50,000 metric tons. During this period, PCTs represented approximately 15 percent of total PCB production (De Kok et al., 1982). Domestic firms significantly reduced their reliance on PCTs after 1972,

importing approximately 900 metric tons between 1973 and 1979 (Jensen and Jorgensen, 1983).

The chemical structure of PCBs and PCTs makes them extremely stable compounds that are slow to degrade under environmental conditions. Microbial degradation occurs at varying rates, depending on the degree of chlorination and the positions of the chlorine atoms on the biphenyl molecule. PCBs with four or fewer chlorine atoms degrade more quickly than PCBs with five or more chlorine atoms. In natural aquatic systems, the majority of PCBs are adsorbed to suspended particles and bed sediments. The tendency for adsorption increases with the degree of chlorination and with the organic content of the sediments.

Due to their chemical composition and attributes, PCBs that have accumulated in soils and sediments tend to become available to biota, typically moving through the food chain from invertebrates to fish, birds, and mammals. The results of field and laboratory studies indicate that PCBs are associated with several adverse effects on biota, including impaired reproduction in fish, marine mammals (Addison, 1989), land mammals, and birds (Giesy et al., 1994).

PCBs have direct toxic effects on some biota (e.g., benthic organisms), but are more widely known for accumulating in the fatty tissues of higher trophic levels through repeated ingestion of contaminated food sources. Stored PCBs mimic hormones and can disrupt the endocrine system that governs reproduction. PCBs also have mutagenic, carcinogenic, and teratogenic properties in some species (Callahan, et al., 1979; Steidl, et al., 1991; Safe, 1994).

Because of their chemical properties, PCBs and PCTs discharged to a water body will adhere to the surfaces of suspended particulate matter. Since these compounds are heavier than water, the composite material is ultimately deposited as sediment. These contaminated sediments may then be distributed through tidal influences, dredging, storm events, and other sources of turbulence. Aquatic organisms also re-suspend and distribute contaminated sediments through bioturbation.

## **2.0 ASSESSMENT OVERVIEW**

### **2.1 SAMPLING DESIGN**

Prior to initiating field activities, the Trustees developed a sampling and analysis plan to document the sampling design and objectives, define sampling parameters, and establish field and chain-of-custody procedures (NOAA, 1997). The design of the sampling program was intended to provide the Trustees with as much information about the study area as possible within reasonable budgetary constraints.

The overall objective of the Duwamish Sediment Study was to provide information to support a natural resource damage assessment (NRDA) in the Duwamish River. The Trustees initiated assessment activities in 1996 after reviewing sediment chemistry data contained in a Resource Conservation and Recovery Act (RCRA) Facility Investigation report formally transmitted to NOAA by the Boeing Company. The geographic scope of the sediment portion of the RCRA Facility Investigation is limited to an area of the river adjacent to the Boeing Company Plant No. 2 facility, which is the subject of a U.S. EPA RCRA Corrective Action Order. The following were stated objectives in the Sampling and Analysis Plan:

- Determine the spatial extent of [PCB and PCT] sediment contamination beyond the boundaries of the area previously characterized by Roy F. Weston near Boeing's Plant 2, where sediment contamination has already been demonstrated (Roy F. Weston, 1996, as given in the Sampling and Analysis Plan).
- Determine if there are other areas of contamination related to releases from Boeing properties or activities.
- Assess the possible transport and far field deposition of Boeing contaminants in other parts of the river.
- Identify the possible presence of other substantial areas of sediment contamination in areas not adjacent to Boeing properties, or not due to releases from Boeing, to evaluate allocation and the likely effectiveness of cleanup and restoration efforts.
- Evaluate methods for identifying the sources of sediment contamination to support allocation of damages.
- Develop sediment chemistry information that, in combination with tissue analyses, could be used to determine bioaccumulation rates.
- Develop information on sediment chemistry that can be related to specific types of natural resources injury.

The sampling design uses a tiered approach to achieve the stated objectives. The Trustees were aware in developing this approach that multiple facilities and industrial activities may have released PCBs into the Waterway. Known information on the location of seeps and outfalls, and PCB releases from The Boeing Company's Plant No. 2 facilities that had already been documented by facility investigations performed by Boeing under the RCRA investigation, were considered in the design process. Therefore, in the first tier, the study area was divided into two separate *sub-areas*, based on proximity of these areas to the adjacent Boeing properties. The first sub-area, Area 1, extends from the southern boundary of the study area (1.5 km upstream from the Turning Basin) to Slip 4. The second sub-area, Area 2, extends from Slip 4 to the southern tip of Harbor Island. In the second tier, the two sub-areas were further subdivided into five cross-sectional *regions*, based on riverine tidal zone characteristics: east intertidal, east subtidal, navigational channel, west subtidal, and west intertidal. The third level of stratification divides the five regions into manageable sampling units or *sub-strata* (Figure 2-1).

In defining the third level of stratification, sub-stratum boundaries were established to designate practical groupings of seeps and outfalls and also take into account physical shoreline features such as slips and probable backwater depositional areas. The intertidal sub-strata were defined in contiguous areas of intertidal sediments; non-contiguous intertidal areas were not combined. The navigational channel sub-strata were larger and fewer in number, assuming relatively greater homogeneity in sediment contamination. In a few portions of the Waterway near known areas of high contamination, such as Slip 1 and Slip 4, the channel was divided into relatively small sub-strata. Some intertidal areas that were characterized by Weston in a previously conducted study were not sampled in this study (Weston, 1997); the remaining areas in the Weston study area received limited resampling. Two sub-strata were defined at the upriver boundary of the study area to provide reference area conditions (one subtidal and one intertidal).

Sample locations within each of the 90 sub-strata were determined by obtaining two sets (x and y coordinates) of 800 three-digit random numbers from the random-number generator function in Microsoft Excel 6.0 and plotting them within each of equally weighted areas (*sampling segments*) defined within each sub-stratum. There were 333 sampling stations defined in the Waterway; the average sample density was approximately 0.4 samples per hectare (0.9 samples per acre). Sampling densities for each sampling segment are available in NOAA, 1997. Area calculations do not include the intertidal areas that were not sampled (due to the previous Weston characterization; see Weston, 1997) or the few hard-substrate stations that could not be sampled.

The Trustees made several judgments in developing the sampling design, based on the need to assess contamination over the relatively large study area. First, they chose a total number of samples that would provide sufficient detectability for significant areas of contamination throughout the entire study area, based on average sampling densities and inter-sample distances. The sampling design was not intended to detect very small local areas of sediment contamination. Second, the Trustees based sub-area, habitat region, and sub-strata definitions within the study area on *a priori* knowledge of seep and outfall locations, tidal influences, and physical shoreline patterns to facilitate the investigation of potential sources of contamination and likely spatial patterns in sediment contaminant distribution. Third, the Trustees used random sampling within segments to select sampling

Duwamish Waterway Sediment Contamination Analysis  
Sampling Program Sub-strata

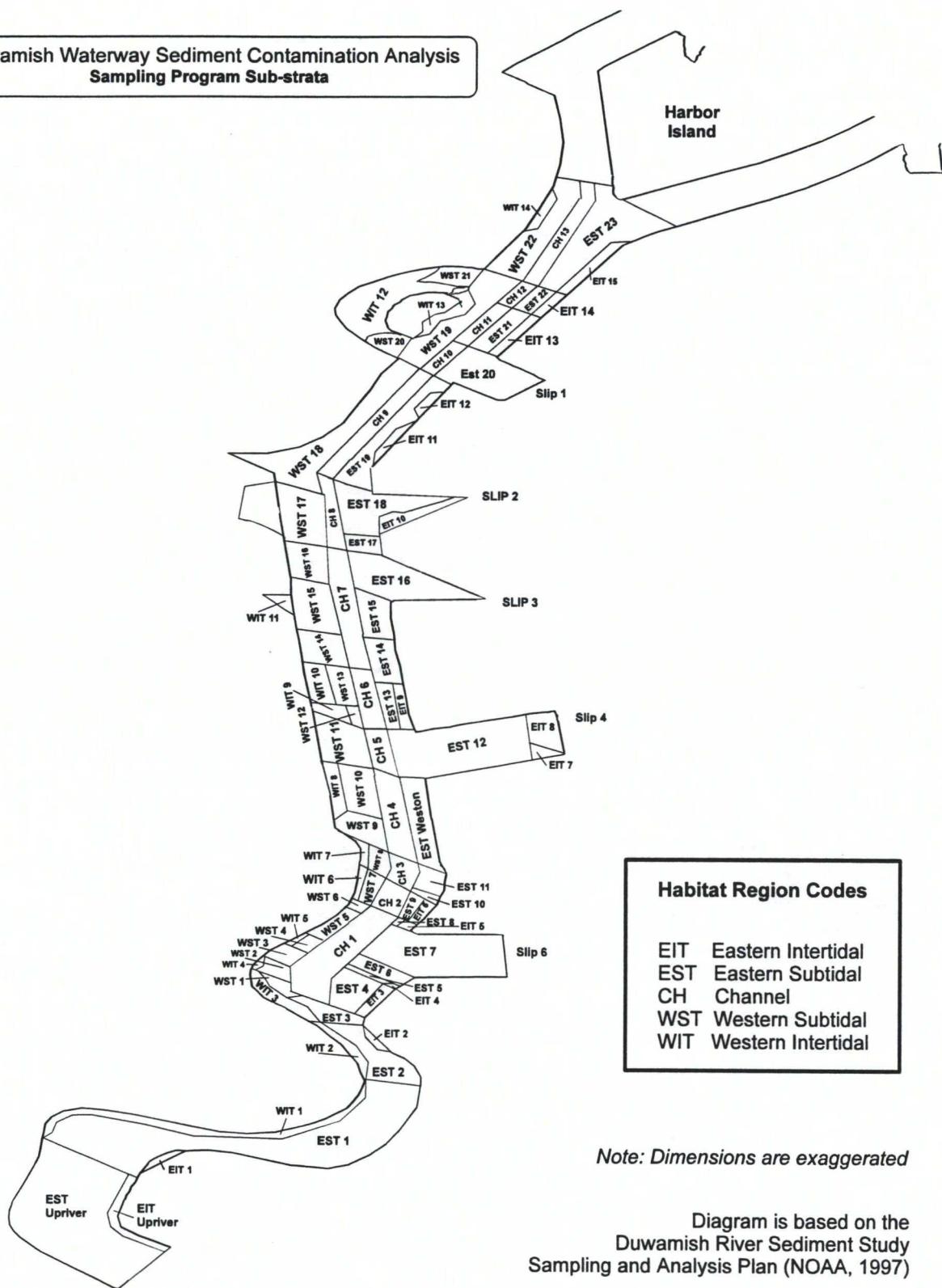


Figure 2-1. A schematic diagram of the Duwamish Waterway subdivided into 90 sub-strata for the sediment sampling program; dimensions are not to scale.

locations within sub-strata with the objective of providing more uniform spatial coverage than pure random sampling.

## 2.2 FIELD SAMPLING

The Trustees established rigorous procedures for field sampling activities, as documented in the Duwamish River Sediment Study Sampling and Analysis Plan (SAP) (NOAA, 1997). Specifically, the SAP documents sampling equipment specifications and provides procedures for locating sample stations in the field. The SAP also contains detailed guidelines governing the collection, handling, and custody of sediment samples. Finally, the SAP documents training guidelines for sampling personnel and provides contingency procedures to handle deviations from anticipated field conditions.

Field operations were conducted from September to November 1997 by the National Marine Fishery Service's staff from the Northwest Fisheries Science Center, Environmental Conservation Division (NWFSC-ECD). The Trustees conducted field audits of the sampling activities on five separate days to ensure compliance with the SAP. During the initial audits, the Trustees noted and corrected minor deviations in sample labeling and the presentation of documentation. All corrections were made before samples were transferred to the laboratory. Therefore, the Trustees conclude that the sampling program complied with the protocols in the SAP, including the procedures for field changes and corrective action.

The original sample design called for the collection of 333 sediment samples; however, the total number of samples actually collected was 328. The difference between the planned and actual number of samples occurred because the field team was unable to collect some samples due to hard substrate or underwater obstacles. In these cases, the field team followed the protocol for selecting alternate sample stations outlined in the SAP. Specifically, if the field team was unable to collect a sample in the first three attempts, the station was abandoned. Five sample stations were abandoned due to substrate interferences. The following stations were abandoned:

- EIT 02-03
- EIT 15-01
- EIT 15-02
- EST 02-01
- EST Upriver-02

The Trustees implemented an audit to verify that samples were collected in the intended area and thus met the study's design objectives. The audit also included checking site depth to verify that the site met the depth criteria for the sampling design (e.g., sites located in subtidal sub-strata were not at depths expected of channel sites). This was done because of the dynamic nature of a dredged river system, where depths may change over time due to dredging or changes in water flow.

The audit showed that there were some discrepancies between targeted and actual sampling locations, as a result of imprecision in positioning. The Trustees identified 25 locations to be resampled; of those, 24 were successfully resampled. Only the resampled

sediments (designated by a trailing -R in the sample identification code) were analyzed for those 24 locations. The original sediment samples were archived but not analyzed. Based on the final recorded sampling locations in comparison to the sampling design, 85 percent of all samples are located in their correct sampling segment (each sub-stratum was divided into equally weighted areas (sampling segments) for randomly generated sample locations). An additional 10 percent are in a nearby sampling segment within the same targeted sub-stratum (Table C-1), and 5 percent are outside their intended sub-strata (Table C-2). These positioning differences are not considered in the preliminary evaluations presented in this report. This simplification does not affect the general spatial patterns presented in the following sections of this report. More detailed analyses should consider the positioning information for collected samples provided in these tables.

### 2.3 ANALYTICAL PROCEDURES

Sediment samples were analyzed for PCBs and PCTs by NWFSC-ECD in Seattle, Washington. Total PCB+PCTs along with the quantitation of 15 individual PCB congeners were determined by methylene chloride extraction followed by high-performance liquid chromatography with photodiode array detection (HPLC/PDA). PCTs were further resolved using gas chromatography with electron capture detection (GC-ECD), then subtracted from the Total PCB+PCTs to obtain a calculated result for Total PCBs. Total organic carbon and grain size analyses were performed by Applied Marine Sciences, Inc. in League City, Texas. Analysis of total organic carbon was conducted according to the Puget Sound Protocols for Measuring Conventional Sediment Variables; grain size analysis was performed following the procedure in Sweet et al. (1994). Analytical procedures which were followed are detailed in the Quality Assurance Plan (QAP) (NOAA 1998).

The method used for the determination of PCBs and PCTs is an adaptation of previously published procedures by NWFSC-ECD scientists. The extraction procedure is a modification of the sonication procedure used by Krahn et al. (1991) for determination of aromatic hydrocarbons in sediment. The procedures for extract cleanup and HPLC/PDA analysis are based on a method developed for determining chlorobiphenyl congeners in marine tissue (Krahn et al., 1994). This method was selected for analysis because it is significantly more rapid and cost-effective than more comprehensive methods (e.g., gas chromatography/high resolution mass spectrometry), while at the same time highly selective for PCBs and PCTs. Two important advantages of a PDA detector over more conventional detectors are the ability to identify individual analytes by comparing their ultraviolet spectra to those of reference standards and the ability to establish the spectral homogeneity (purity) of the analytes. Target detection limits of 4 ppb dry weight, which were specified in the project QAP, were readily achieved for Total PCBs and the PCB congeners in method detection limit studies performed by the laboratory. For total PCTs, the calculated method detection limit was greater than the target of 4 ppb dry weight at 8.15 ppb dry weight.

For reference purposes, the HPLC/PDA detection limits compare favorably to the more routine EPA methods which use GC-ECD for quantifying PCBs (EPA Methods 8081 and 8082). Detection limits for the EPA Method 8082 are in the range of 1 ppb dry weight for congeners and 50 ppb dry weight for Total PCBs as Aroclors.

## **2.4 QUALITY ASSURANCE**

The Quality Assurance Plan (QAP) for the Duwamish River Sediment Investigation was developed by NWFSC-ECD in conjunction with EcoChem, Inc. (NOAA, 1998). The procedures are rigorous and meticulous, and are designed to meet the guidelines developed by the U.S. Environmental Protection Agency (U.S. EPA) and case-specific criteria developed by the Trustees. For the Duwamish Waterway sediment investigation, specific QA requirements were designed to monitor the performance of the measurement systems, to maintain statistical control and quality, and to verify that reported data were sufficiently complete, comparable, representative, unbiased, and precise. These objectives were achieved by defining QA procedures for the following categories: project QA responsibilities, sample handling and chain of custody, laboratory operations, assessment of data quality, quality control procedures, data reduction, corrective action and procedure alterations, and quality assurance reports to management. Quality assurance is further ensured through the use of an implementation structure that invokes multiple layers of responsibility and authority, employs communication and documentation procedures, and requires specific prerequisites and activities to ensure that sample data are technically sound, usable, and legally defensible. Quality assurance and control review procedures were enforced within the laboratory and by the QA Coordinator as necessary.

As a final step in the QA process, the Trustees retained EcoChem, Inc. to perform an independent data quality evaluation. As part of this validation process, EcoChem qualified many laboratory results as undetected, estimated due to co-eluting compounds, or estimated because the reported concentration was below the calculated method detection limit. The report also notes that 77 results for individual PCB congeners were not reported due to analytical interferences with co-eluting PCTs. As judged by EcoChem, these conditions do not compromise the data and none of the reported results were rejected. Overall, EcoChem concluded that the laboratories followed the specified analytical procedures and the protocols defined in the QAP and that the data are sufficient for use. The complete validation report is included in Appendix B.

## **2.5 SEDIMENT SAMPLING DATA BASE**

The Trustees maintain an official source data base to house the information generated during the Duwamish Waterway sediment investigation. The data base contains information on 328 samples along with associated results for Total PCBs, 15 PCB congeners, Total PCTs, grain size, and total organic carbon (TOC). The data base also contains laboratory and validation qualifiers, sample identification information, and spatial scale characteristics for each sample. Analytical chemistry results, validation, and station location information from this data base are provided in Appendix A.

The tables in Appendix A contain three types of information sets for the Duwamish Waterway sediment sample analysis results: sample physical data, sample total PCB and PCT concentrations, and congener concentration levels. The congener results are presented in separate tables which correspond to the regions defined in the Sampling and Analysis Plan (NOAA, 1997) and described in Section 2.1 of this report. Each of these tables lists the PCB congeners, total PCBs, and total PCTs for each station, in parts per billion dry weight, with associated qualifiers.

## **3.0 EXTENT AND NATURE OF CONTAMINATION**

The data from the sediment sampling program show that PCBs and PCTs are found throughout the study area, although at a wide range of concentrations. In this section, the extent of this contamination is summarized with respect to two known sediment quality guidelines. One criterion is based on sediment contamination studies used by Washington State, and the other set of criteria is derived from numerous sediment toxicity sediment studies conducted throughout North America. These guidelines were used in this report because the Trustees have not yet derived a primary restoration goal for PCBs or PCTs in the Duwamish Waterway.

### **3.1 APPLICABLE CRITERIA**

The Washington State Marine Sediment Quality Standards (SQS) level for PCB contamination is 12 mg of PCB per kg of Total Organic Carbon (TOC; WAC 173-204-320). This standard is intended to correspond to a sediment quality level (within Puget Sound marine sediments) below which acute or chronic adverse effects to biological resources, as a result of PCB contamination, are not likely. Information provided in Section 3.2 presents a general analysis of the extent of the contaminated sediments with respect to this standard.

Another set of criteria for evaluating the potential for biological effects associated with sediment PCB contamination has been derived by Long and Morgan (Long and Morgan, 1990; Long, et al., 1995). Based on numerous toxicity studies that recorded both PCB concentration in sediments and adverse biological effects, Long and Morgan have derived two levels for defining the correlation: ER-L (22.7 ppb dry weight) and ER-M (180 ppb dry weight). ER-M represents the median level at which acute toxicity is observed and can be interpreted as the chemical concentration above which direct biological effects are likely. Similarly, ER-L is a level at which acute toxicity is observed in only 5% of the studies reviewed, and can be regarded as the chemical concentration below which direct biological effects are unlikely. Section 3.3 provides the results of a comparison between the PCB contamination levels in the Duwamish Waterway and the Long and Morgan criteria.

There are no similar values for PCTs. Section 3.2 reviews the extent of PCT contamination, but does not evaluate these data with respect to potential natural resource injury. The Trustees anticipate that the PCT data could be useful for differentiating releases by sources that used PCTs and therefore provide some guidance for evaluating sediment PCB contamination levels and distribution in possible future investigations in the Duwamish Waterway.

### **3.2 EXTENT OF PCB AND PCT CONTAMINATION AND COMPARISON WITH WASHINGTON SQS LEVEL**

To analyze the data set presented in Appendix A, the values for sample replicates were averaged so that there was one value for each sample location (Field-ID). In addition,

a carbon-normalized PCB concentration was calculated as

$$(\text{Total PCB-calc}/(\text{TOC}/100))/1000$$

for use in comparisons to the Washington State SQS.

Figures 3-1 and 3-2 show reference maps of the total unnormalized (i.e., not normalized for Total Organic Carbon) PCB and PCT concentration ranges observed in Duwamish Waterway sediments by sampling location. The distributions of concentration values, which range through several orders of magnitude for both contaminants, are summarized in histogram form in Figure 3-3. Note that the intervals on the concentration axes in these graphs increase logarithmically. This logarithmic scale is used because it allows environmental data, which commonly exhibit order-of-magnitude separations among the observations, to be summarized effectively. Under these conditions, the usual statistical measures such as the mean and the variance can be misleading summaries of the observations, and other measures more closely tied to the actual distribution of data values should be used (e.g., the median and the range).

When the concentration values are adjusted to account for sediment carbon content, in order to apply the Washington State sediment quality standard, 82 of the 326 samples for which Total PCBs are reported (25%) exceed the standard. Since the sampling program was not designed to achieve a uniform sampling density, the area of the Waterway exceeding the SQS has to be evaluated by taking into account the area represented by each sample. The estimates for the area in each sub-stratum provided in the Sampling and Analysis Plan were used as the basis for this analysis.

Figure 3-4 presents a cumulative distribution function of contaminant concentration versus percent of Waterway area. The proportion of the area of the Waterway affected by PCBs or PCTs with respect to a specific criterion can be obtained from Figure 3-4 by drawing a vertical line at the level of interest. The PCB graph illustrates this technique to show the area of the Waterway above and below the Washington State SQS (12 mg/kg TOC-normalized PCB concentration). The x-axis uses a logarithmic scale, with the Washington State SQS level indicated for reference; approximately 80% of the sampled area of the Waterway is at or below this level. Based on the interpretation of the SQS, the remaining 20%, which is above the criterion, has the potential for acute or chronic adverse effects to biological resources.

The areas exceeding the SQS are relatively localized in the Waterway. Table 3-1 summarizes the distribution of these areas with respect to the five major habitat regions that were sampled. The intertidal areas on either side of the Waterway have the greatest proportion exceeding the criterion (greater than 30% in each case), while the largest amount of area above this level is in the East Subtidal (26.46 acres). Overall, almost 71 acres, representing approximately 19% of the sampled area, are estimated to be above the Washington State SQS.

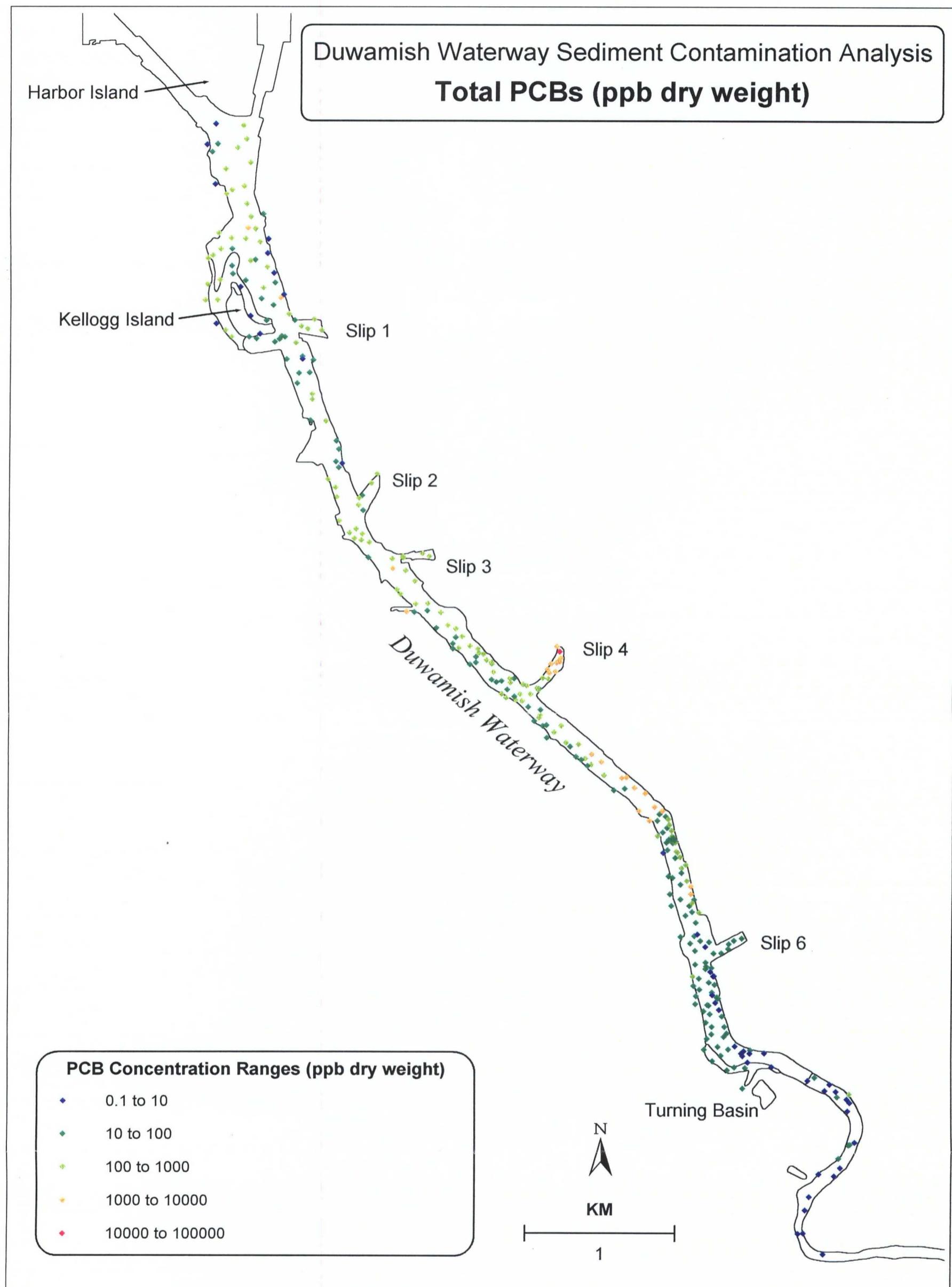


Figure 3-1. Measured PCB concentrations (in ppb) in Duwamish Waterway sediments.

3-4

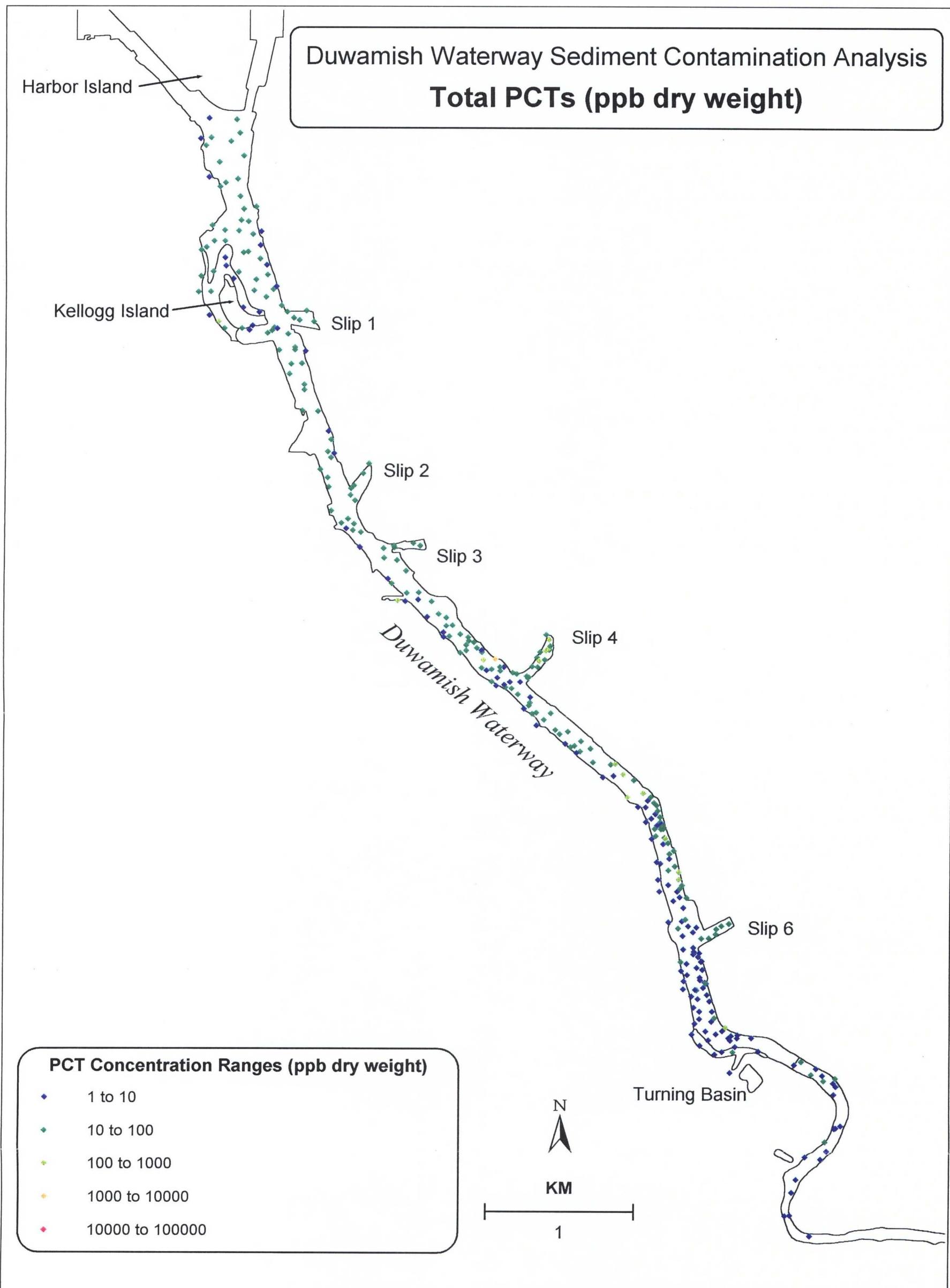


Figure 3-2. Measured PCT concentrations (in ppb) in Duquamish Waterway sediments.

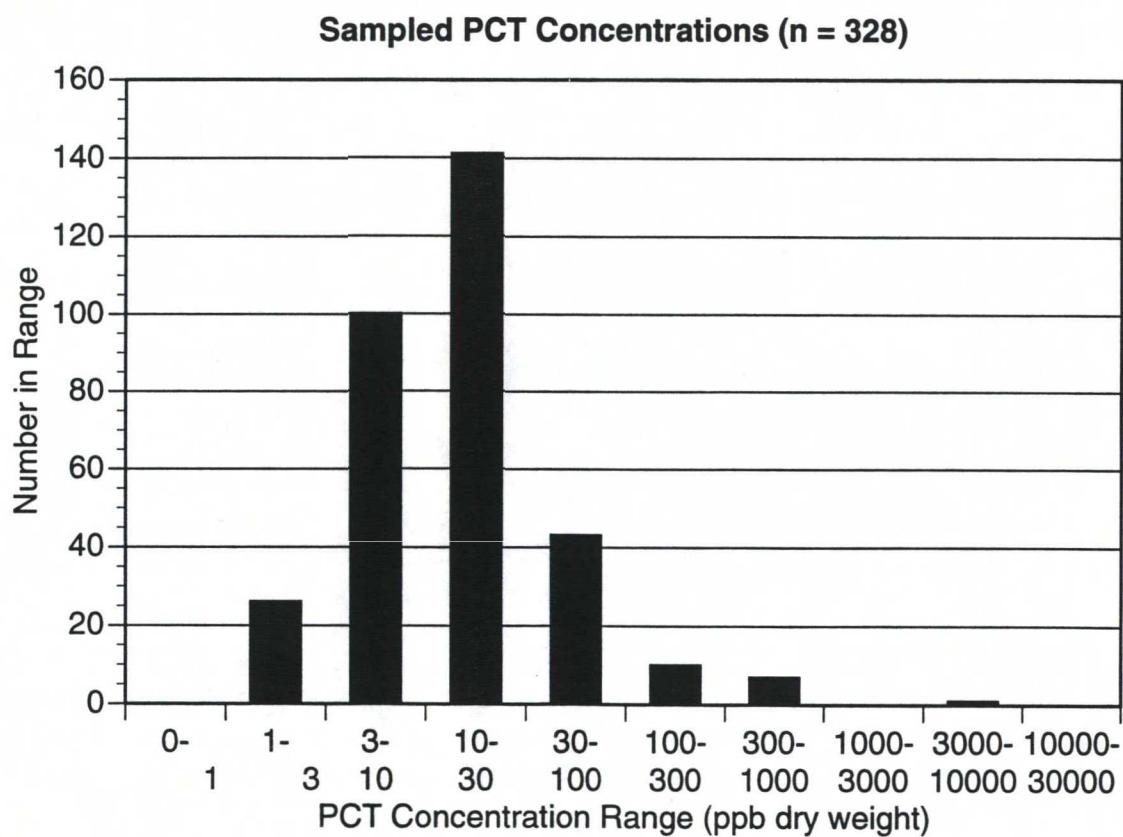
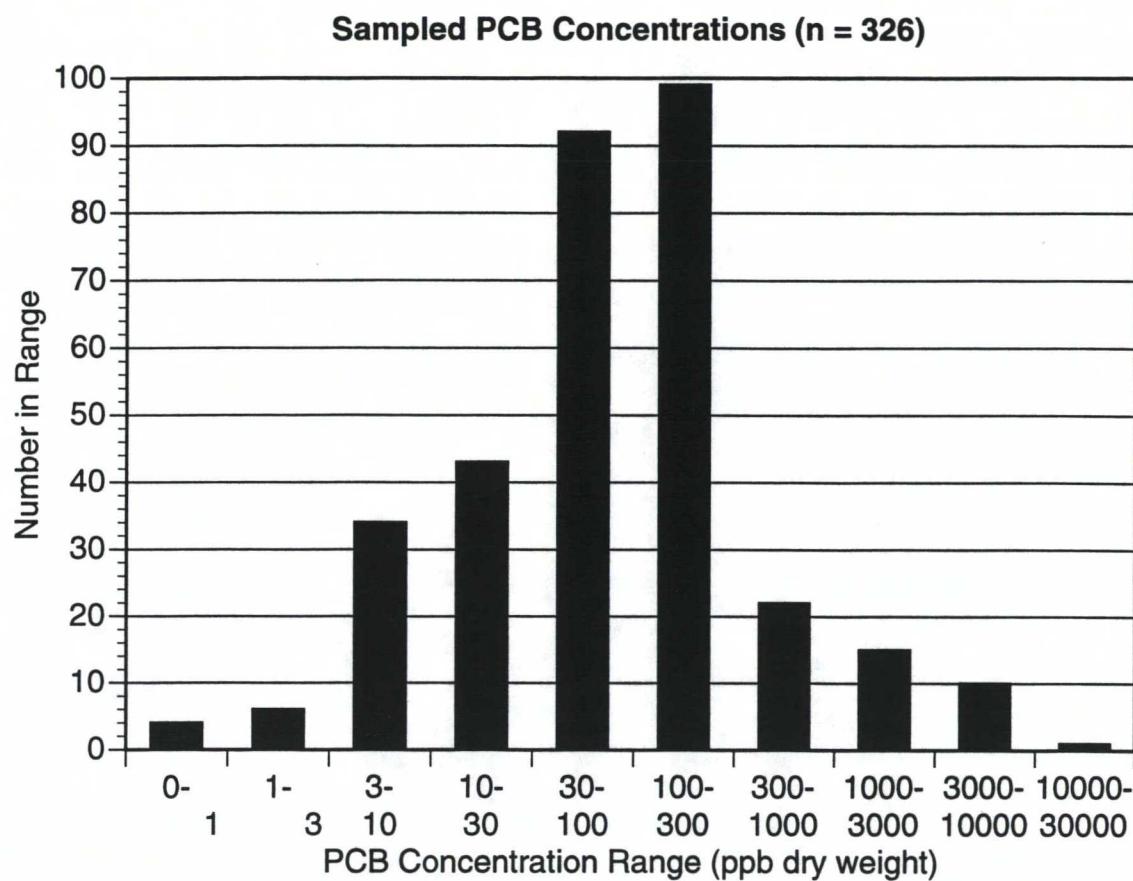
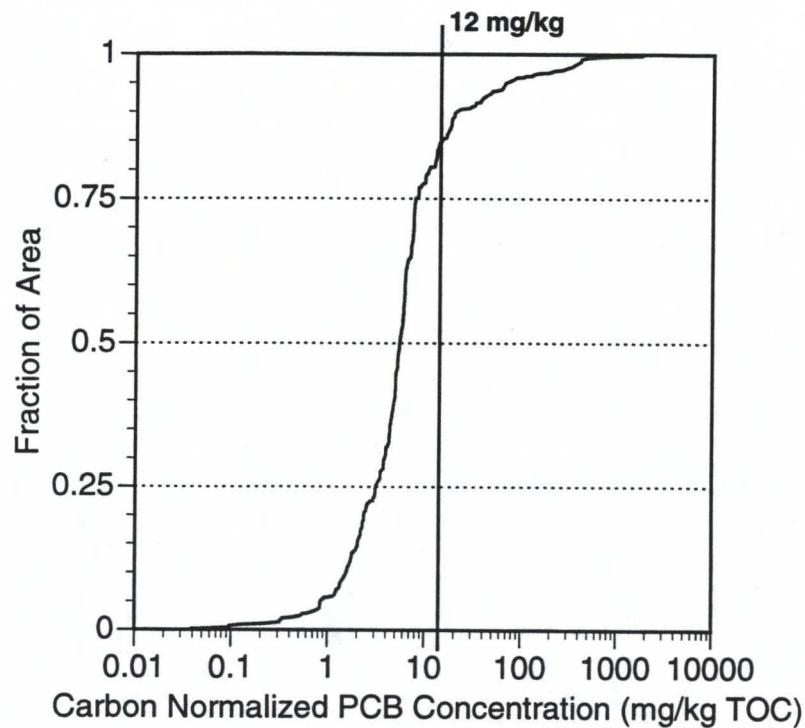


Figure 3-3. Observed distributions of PCB and PCT concentrations in the Duwamish Waterway sediment samples.

### Cumulative Area Impacted by PCBs



### Cumulative Area Impacted by PCTs

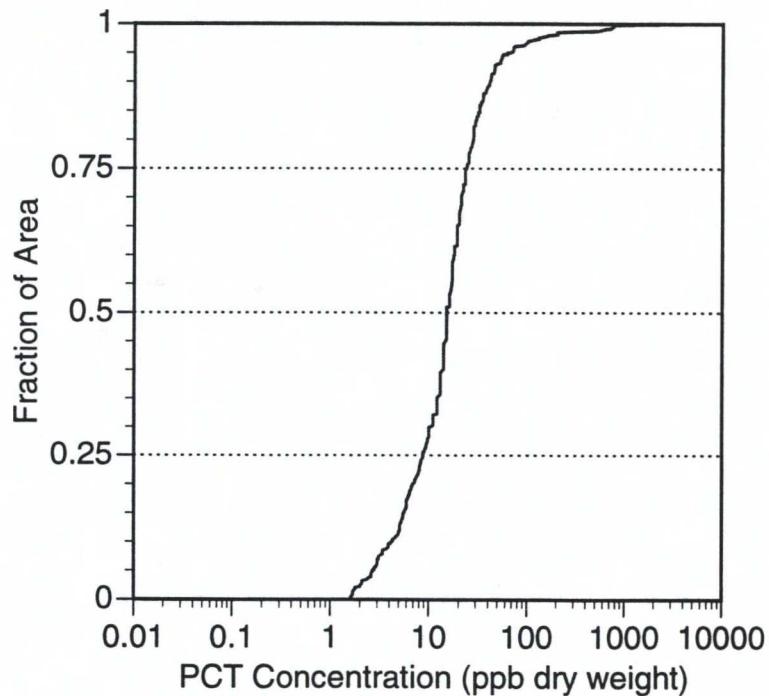


Figure 3-4. The fraction of the area of the Duwamish Waterway with PCB or PCT levels below a given concentration. The Washington State Marine Sediment Quality Standards level (12 mg PCB/kg TOC) is indicated for reference on the PCB graph, which uses TOC-normalized concentrations.

**Table 3-1. Area exceeding Washington State Marine Sediment Quality Standards level for Total PCBs (12 mg/kg TOC-normalized PCB concentration)**

Habitat Regime	Acres Sampled	Acres Exceeding SQS	% of Acres Exceeding SQS
East Intertidal	21.8	7.06	32.4
East Subtidal (including Weston)*	121.8	26.46	21.7
Channel	89.9	14.75	16.4
West Subtidal	94.4	7.68	8.1
West Intertidal	40.6	14.97	36.9
<b>Total</b>	<b>368.5</b>	<b>70.91</b>	<b>19.2</b>

\* The Weston study area was part of the East Subtidal region and was treated separately in the sample design because of the large number of pre-existing studies in this area.

In addition to the tidally defined regions, the sampling design defined numerous specific sampling sub-strata within the five regions (see Figure 2-1). An analysis of the PCB data within each sub-stratum further refines the physical location of contamination. In this analysis, each sub-stratum was classified according to the following criteria: a) all samples' concentrations exceed the Washington State SQS; b) there are sample concentrations both above and below the SQS; and c) all of the samples' concentrations are below the SQS. This classification of the Waterway, as shown schematically in Figure 3-5, indicates several areas of high contamination (above SQS) in the middle region of the Waterway. In contrast, most of the contaminant levels in the upper river sub-strata (south of and including Slip 6) fall consistently below the SQS. The remainder of the Waterway has a mixture of contamination levels, with sub-strata that have one or more samples above the criterion interspersed with those that have none above the SQS.

The general pattern observed in Figure 3-5 suggests that the Waterway can be split into three large areas for analysis of contaminant levels and variability. The natural break-points exist just downriver (toward the top of the diagram) of Slips 2 and 6. Table 3-2 lists the high, median, and low (carbon-normalized) PCB concentrations for these three areas, by tidal region. This table is similar to the map in Figure 3-5, but quantifies the magnitude and variation in contaminant levels among the areas. The southern area is generally below the SQS level, with a few hot spots (high values) in the East Subtidal and the West Intertidal. The northern area is similar, but with generally higher median values and more hot spots, including a high concentration in the East Subtidal that is more than 20 times the SQS level. In the middle area, all of the maximum values are more than 30 times the SQS level, and the median value for the East Intertidal also exceeds this standard. The biological implications of such high contaminant levels are presented in Section 3.3.

Duwamish Waterway Sediment Contamination Analysis  
 Washington SQS Level\* Exceedances

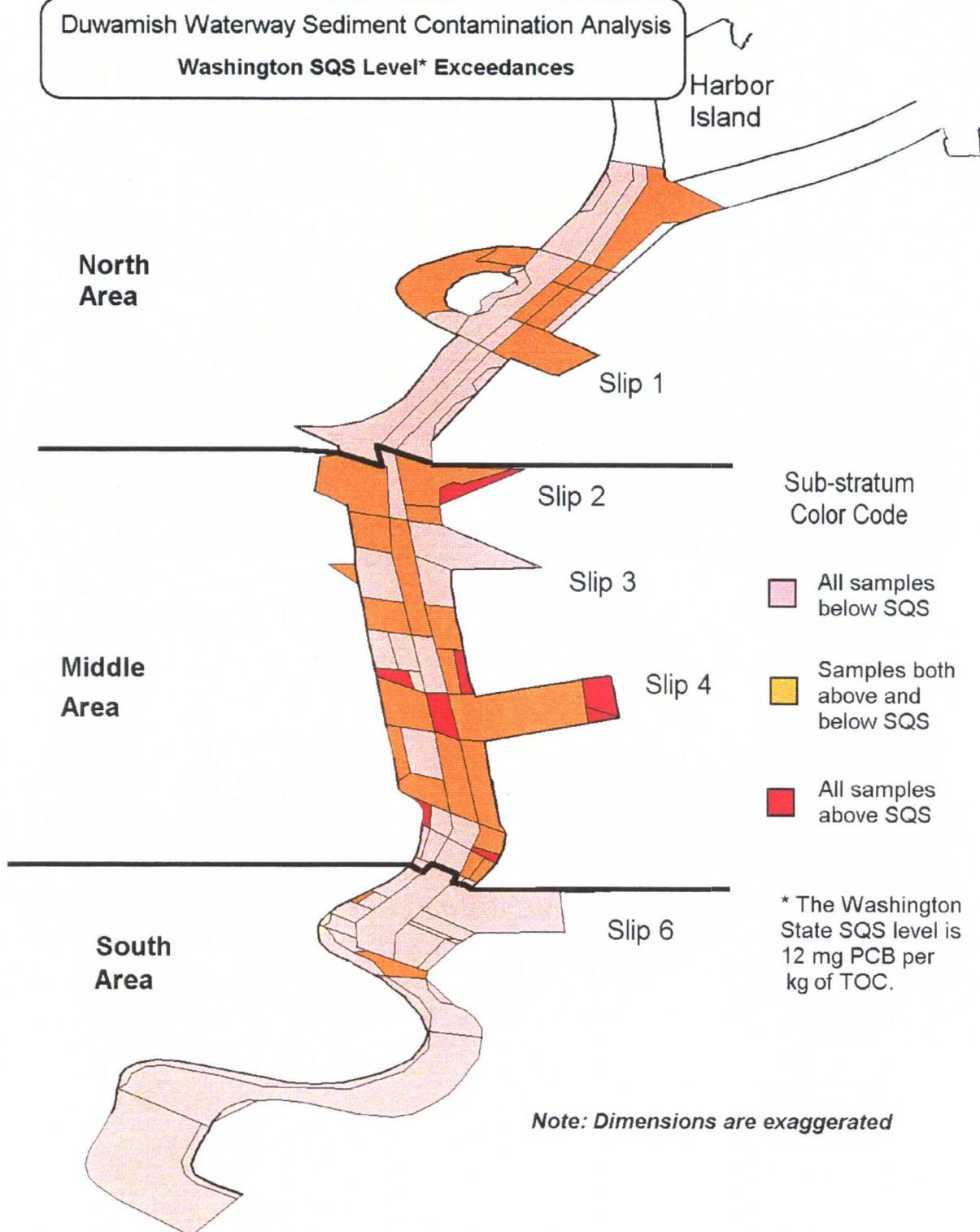


Figure 3-5. A schematic diagram showing three classes of sediment contamination relative to Washington State standards, based on samples collected within each sub-stratum.

Table 3-2. Carbon-normalized PCB concentration ranges in Duwamish Waterway sediments (mg/kg TOC)

Habitat Regime		Waterway Segment		
		South Area	Middle Area	North Area
East Intertidal	No. Samples	13	18	10
	Minimum	0.34	3.95	0.12
	Median	2.51	<b>37.48</b>	3.48
	Maximum	10.53	<b>1805.05</b>	10.33
East Subtidal	No. Samples	35	66	26
	Minimum	0.09	0.04	3.72
	Median	1.46	11.57	6.31
	Maximum	<b>18.51</b>	<b>607.84</b>	<b>299.32</b>
Channel	No. Samples	4	21	13
	Minimum	0.85	0.80	3.17
	Median	1.46	4.14	5.58
	Maximum	2.34	<b>403.94</b>	<b>80.92</b>
West Subtidal	No. Samples	12	36	19
	Minimum	1.21	1.37	3.05
	Median	2.17	5.51	4.97
	Maximum	3.06	<b>406.74</b>	<b>17.44</b>
West Intertidal	No. Samples	19	18	16
	Minimum	0.32	3.44	0.34
	Median	1.23	8.70	4.75
	Maximum	<b>21.38</b>	<b>838.71</b>	<b>38.33</b>

Values exceeding the Washington State Sediment Quality Standard for PCB of (12 mg/kg TOC) are indicated in bold-faced and italicized type.

### 3.3 NATURE OF PCB CONTAMINATION IN RELATION TO BIOLOGICAL EFFECTS

The general characterization of the physical extent of contamination in the Waterway presented in Section 3.2 can be refined in terms of its biological implications by using the published ER-L and ER-M criteria for PCB toxicity to benthic organisms (Long and Morgan, 1990; Long, et al., 1995). The Long and Morgan criteria are derived from numerous toxicity modeling, laboratory, and field studies performed with marine and estuarine sediments from areas throughout North America. The two guideline values, effects range-Low (ER-L) and effects range-Median (ER-M), define three concentration ranges that are rarely (below ER-L), occasionally (between ER-L and ER-M), or frequently (above ER-M) associated with adverse effects (acute toxicity) in organisms or communities. These criteria can be used to assess the biological significance of sediment-associated contamination. The values of ER-L (22.7 ppb dry weight) and ER-M (180 ppb dry weight) were compared to unnormalized PCB concentrations found in the sediments collected in the Duwamish Waterway. Results of this comparison are presented in this section.

If the schematic in Figure 3-5 is redrawn, using the ER-L and ER-M, the sub-strata fall into 6 classes (Figure 3-6). The classes include samples' PCB concentrations relative to the ER-L and ER-M as follows:

Duwamish Waterway Sediment Contamination Analysis  
Biocriteria Exceedances

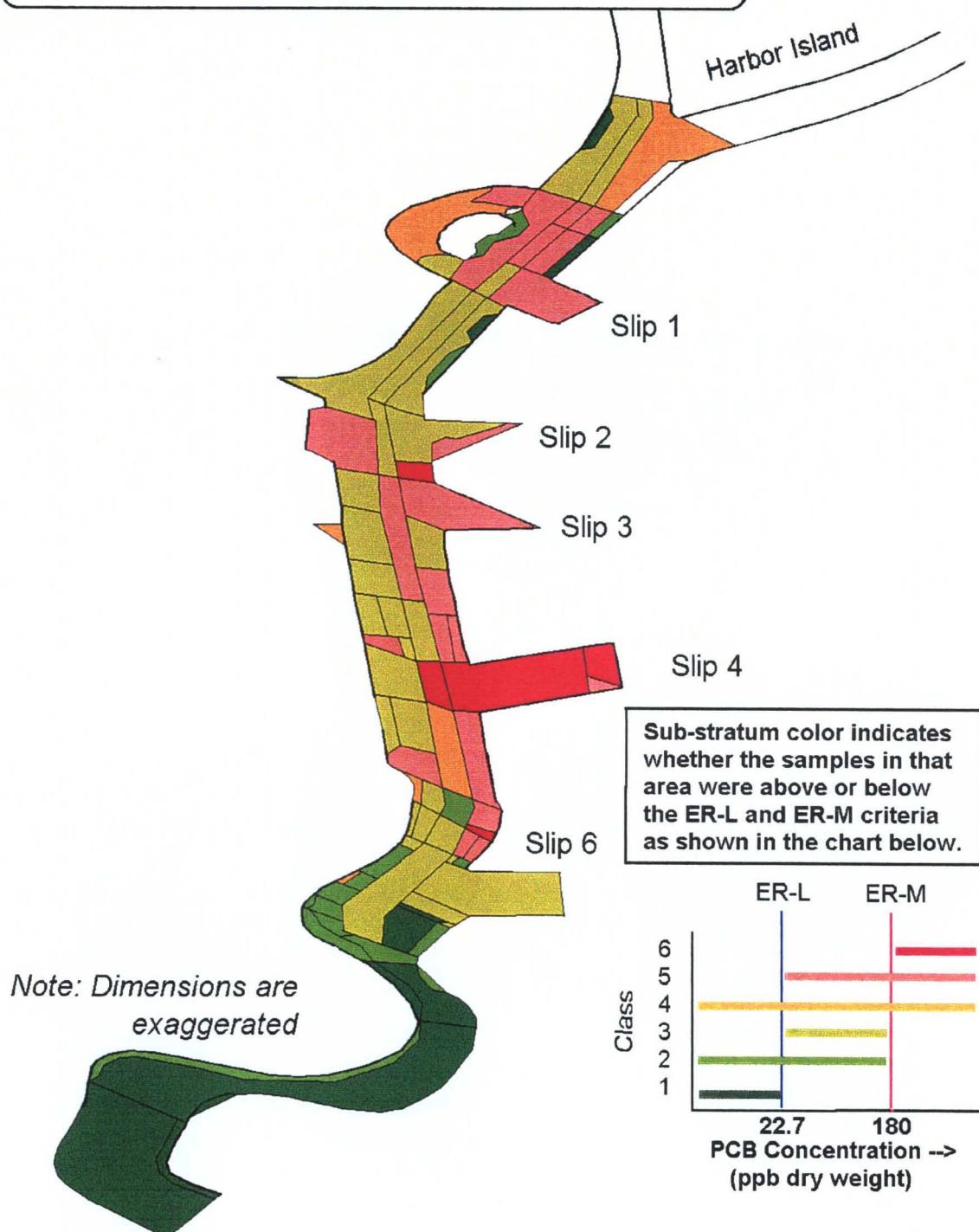


Figure 3-6. A schematic diagram showing six classes of sediment contamination relative to ER-L and ER-M levels, based on samples collected within each sub-stratum (see text for details).

**Ranges for PCB Contamination Depicted in Figure 3-6**

<b>Class</b>	<b>&lt;= ER-L</b>	<b>ER-L &lt; and &lt;= ER-M</b>	<b>ER-M &lt;</b>	<b>Color</b>
1	x			Dark Green
2	x	x		Green
3		x		Chartreuse
4	x	x	x	Gold
5		x	x	Orange
6			x	Red

In Class 6 areas (red on the schematic), all of the samples obtained were above ER-M; this includes almost all of Slip 4 and two other areas. Because ER-M is an acute toxicity measure, these areas are predicted to have impacted populations of benthic organisms. Class 5 areas are also likely to be impacted by PCB contamination, although there are some lower concentrations reported for samples in Class 5 areas. Essentially all of the East Intertidal and East Subtidal regions down-river (north) of Slip 6 to Slip 2 are either Class 5 or Class 6.

At the other end of the continuum, Class 1 areas have no samples with contamination levels above ER-L, and thus, sediment contamination in areas within this Class may rarely be associated with adverse biological effects to resident organisms. Class 2 areas are similar, but also have some samples with contamination levels above ER-L which may represent toxic spots. Together, these two Classes, occurring primarily from Slip 6 and southward (up-river), represent sediment PCB contamination which, in toxicity studies, are only occasionally associated with adverse biological effects. Since the toxicity is relatively low, but contamination is still present, benthic organisms in these areas may not be acutely impacted, but may still be contributing to bioaccumulation in higher organisms.

In fact, previous investigations conducted on fish from the Duwamish Waterway have shown that juvenile salmon, as well as other species, bioaccumulate PCBs and other contaminants. PCB bioaccumulation in juvenile chinook salmon has been found to be associated with impaired growth and increased mortality after disease challenge (Varanasi et al., 1993; Arkoosh et al., 1998). Concentrations of PCBs in juvenile chinook salmon caught in the Duwamish Waterway are higher than levels found in juvenile salmon caught in rural reference areas (McCain et al., 1990; Varanasi et al., 1992; Stein et al., 1995). High concentrations of PCBs have also been measured in the eggs of glaucous winged gulls in the Elliott Bay/Duwamish area (Speich et al., 1992). Based on the results of this sediment characterization study and published studies of the exposure, uptake, and bioaccumulation of PCBs by organisms, the quantity and concentrations of PCBs found in Duwamish Waterway sediments are potentially sufficient to cause injuries to natural resources.

### 3.4 DISTRIBUTION PATTERNS OF CHEMICAL MIXTURES

The Trustees are considering future studies that will analyze the Duwamish Sediment Characterization Study data set in more detail. Preliminary analyses of contaminant patterns, conducted for this report, provide an indication of the usefulness of this data set for investigating the distribution of PCBs in the lower portion of the Duwamish River. The data set includes information on specific PCB congeners detected at each sampled location. The information collected could be used in conjunction with other studies and analyses to investigate some of the more complex aspects of the PCB distribution in the Waterway, such as time since the PCB release at a location, transport of PCBs between locations, the amount of mixing of PCBs from different releases, and the original composition (Aroclor™ mixture) of the PCB release represented at a location. Congener-level PCB concentrations provide a more detailed chemical characterization of sediment contamination than simple Total PCB results. Those more detailed congener-level data can support refined statistical evaluations that may help in identifying and evaluating sources or fate and transport processes contributing to the observed contaminant distributions in sediments.

The relative chemical breakdown of the 10 samples with the highest Total PCB+PCT concentrations is shown, with the relative locations of the samples, in Figure 3-7. All of the samples indicated have total concentrations greater than 4,000 ppb dry weight. Eight of the 15 PCB congeners that can be resolved by the HPLC/PDA method (PCBs 77, 105, 126, 128, 156, 157, 169, and 189) are either not detected or present only in trace amounts (less than 5%) in all samples; these congeners are not plotted in the figure. The "other" category represents the remaining fraction of the total PCB+PCT concentration for each sample that was not accounted for by the sum of the 15 congeners and PCT concentrations.

There are evident differences in the chemical mixtures at these locations. For example, PCTs are an important component only in the samples from the Weston substrata (samples DAC-WEST03 and DAC-WEST04 in the figure). PCB180 is found primarily in the samples south of Slip 4, while the samples in Slip 4 are dominated by PCB congeners that were not individually identified by the laboratory methods used in this study. The Trustees are investigating how these and other differences can be mathematically quantified.

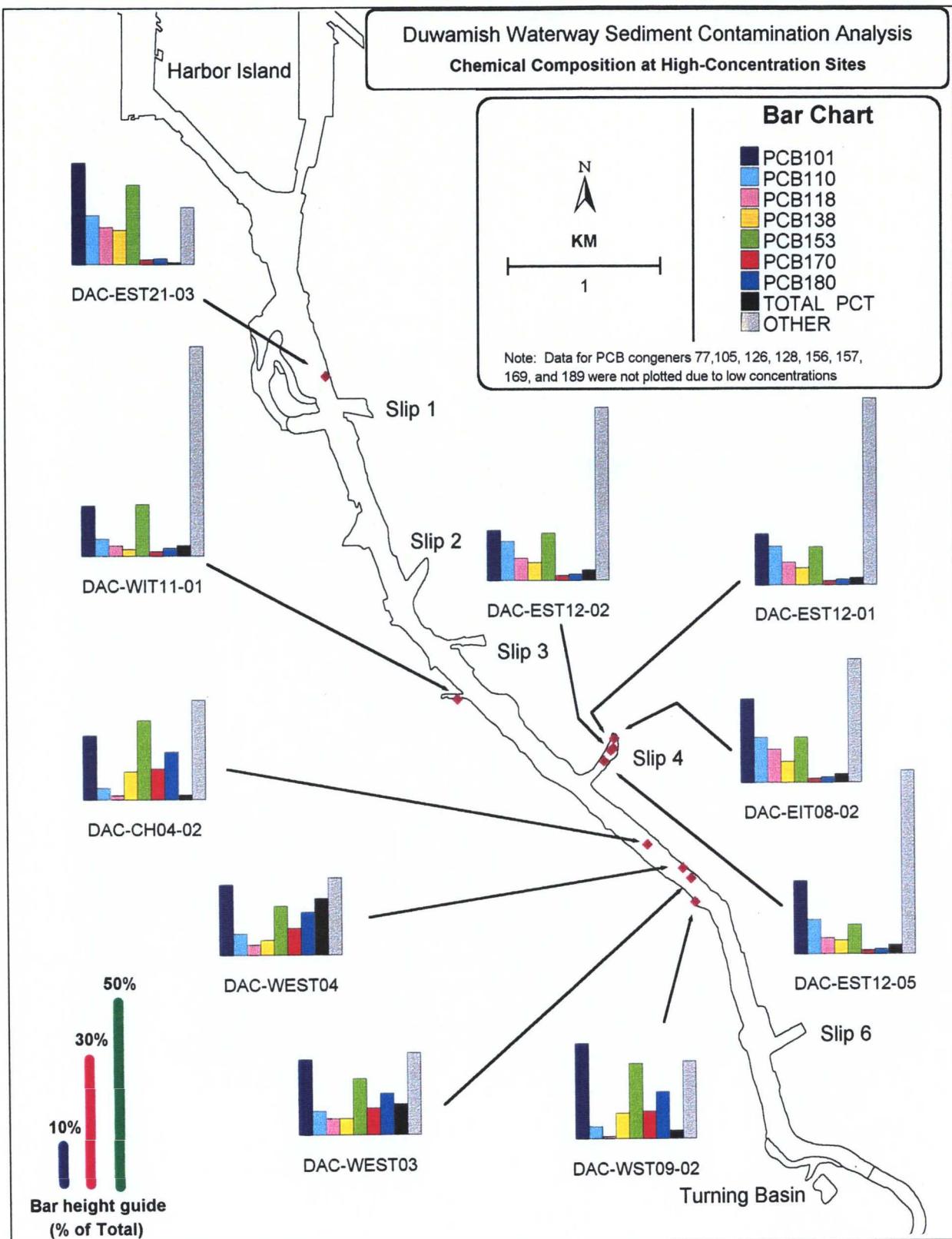


Figure 3-7. The chemical compositions of the 10 samples with the highest Total PCB + PCT concentrations; the samples' FIELD\_IDs are shown below each graph.

## 4.0 REFERENCES

- Addison, R.F. 1989. Organochlorines and marine mammal reproduction. *Can. J. Fish. Aquat. Sci.* 46:360-368.
- Arkoosh, M.R., E. Casillas, P. Huffman, E. Clemons, J. Evered, J.E. Stein, and U. Varanasi. 1998. Increased susceptibility of juvenile chinook salmon (*Oncorhynchus tshawytscha*) from a contaminated estuary to the pathogen *Vibrio anguillarum*. *Transactions of the American Fisheries Society* 127:360-374.
- Callahan, M.A., et al. 1979. Water-related Environmental Fate of 129 Priority Pollutants. U.S. Environmental Protection Agency, Office of Water and Waste Management, Washington, DC, EPA-440/4-79-029a.
- De Kok, A., R.B. Geerdink, G. DeVries, and U.A. Th. Brinkman. 1982. An evaluation of Chromatographic methods for the Analysis of polychlorinated terphenyls in environmental samples. *International Journal of Analytical Chemistry* 12:99-122.
- Erickson, M.D. 1997. Analytical Chemistry of PCBs, 2<sup>nd</sup> ed. CRC Press, Inc.
- Giesy, J.P., J.P. Ludwig, and D.E. Tillin. 1994. Deformities in birds of the Great Lakes region: assigning causality. *Environ. Sci. Technol.* 28(3):128-135.
- Jensen, A.A., and K.F. Jorgensen. 1983. Polychlorinated terphenyls (PCTs) use, levels and biological effects. *Science of the Total Environment*, 27:231-250.
- Krahn, M.M., G.M. Ylitalo, J. Buzitis, C.A. Sloan, D.T. Boyd, S. Chan, and U. Varanasi. 1994. Screening for planar chlorophenyl in tissues of marine biota by high-performance liquid chromatography with photodiode array detection. *Chemosphere* 29(1):117-139.
- Krahn, M.M., G.M. Ylitalo, J. Joss, and S.L. Chan. 1991. Rapid, semi-quantitative screening of sediments for aromatic compounds using sonic extraction and HPLC/fluorescence analysis. *Mar. Environ. Res.* 31:175-196.
- Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. Incidence of adverse biological effects within ranges of chemical concentrations in marine and estuarine sediments. *Environmental Management* 19(1):81-97.
- Long, E.R., and L.G. Morgan. 1990. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52.
- McCain, B.B., D.C. Malins, M.M. Krahn, D.W. Brown, W.D. Gronlund, L.K. Moore, and S.L. Chan. 1990. Uptake of aromatic and chlorinated hydrocarbons by juvenile chinook salmon (*Oncorhynchus tshawytscha*) in an urban estuary. *Arch. Environ. Cont. Toxicol.* 19:10-16.

- National Oceanic and Atmospheric Administration (NOAA). 1997. Duwamish River Sediment Study Sampling and Analysis Plan. Report prepared for the NOAA Damage Assessment Center, Seattle, WA by Environmental Conservation Division, Northwest Fisheries Science Center, National Oceanic and Atmospheric Administration, Seattle, WA.
- National Oceanic and Atmospheric Administration (NOAA). 1998. Duwamish River Sediment Study Quality Assurance Plan. Report prepared for the NOAA Damage Assessment Center, Seattle, WA by Environmental Conservation Division, Northwest Fisheries Science Center, National Oceanic and Atmospheric Administration, Seattle, WA in collaboration with EcoChem, Inc.
- Safe, S.H. 1994. Polychlorinated biphenyls (PCBs); environmental impact, biochemical and toxic responses, and implications for risk assessment. *Crit. Rev. Toxicol.* 24(2):87-149.
- Speich, S.M., J. Calambokidis, S. Shea, J. Peard, M. Witter, and D.M. Frye. 1992. Eggshell thinning and organochlorine contaminants in western Washington waterbirds. *Colonial Waterbirds* 15:103-112.
- Steidl, R.J., C.R. Griffin, and L.J. Niles. 1991. Reproductive success and eggshell thinning of a re-established Peregrine Falcon population. *J. Wildlife Management* 55(2):294-299.
- Stein, J.E., T. Hom, T.K. Collier, D.W. Brown, and U. Varanasi. 1995. Contaminant exposure and biochemical effects in outmigrant juvenile chinook salmon from urban and non-urban estuaries of Puget Sound, Washington. *Environ. Toxicol. Chem.* 14:1019-1029.
- Sweet, S.T., J.M. Wong, J.M. Brooks, and T.L. Wade. 1994. Sediment grain size analyses. Geotechnical and Environmental Research Group, Texas A&M University.
- Tanner, C.D. 1991. Potential intertidal habitat restoration sites in the Duwamish River Estuary. EPA 910/9-91-050. Prepared for the Port of Seattle Engineering Department and the U.S. Environmental Protection Agency, Environmental Evaluations Branch, Region 10, Seattle, Washington. December, 1991.
- Thomas, K.B. and T. Colborn. 1992. Organochlorine endocrine disruptors in human tissue. In: Chemically-induced alterations in sexual and functional development: The wildlife/human connection. Advances in Modern Environmental Toxicology, Vol. XXI, pp. 342-343. T. Colborn, and C. Clement, eds. Princeton, NJ: Princeton Scientific.
- U.S. Fish and Wildlife Service (USFWS). 1996. Elliott Bay/Duwamish River preliminary avian and mammal injury/exposure assessment. November 6, 1996.
- U.S. Geological Survey (USGS). 1997. Gauge Number 1211300.

Varanasi, U., J.E. Stein, W.L. Reichert, K.L. Tilbury, M.M. Krahn, and S.L. Chan. 1992. Chlorinated aromatic hydrocarbons in bottom sediments, fish and marine mammals in U.S. coastal waters; laboratory and field studies of metabolism and accumulation. In: Persistent Pollutants in Marine Ecosystems. C.H. Walker and D.R. Livingstone, editors, pp. 83-115.

Varanasi, U., E. Casillas, M.R. Arkoosh, T. Hom, D.A. Misitano, D.W. Brown, S-L Chan, T.K. Collier, B.B. McCain, and J.E. Stein. 1993. Contaminant exposure and associated biological effects in juvenile chinook salmon (*Oncorhynchus tshawytscha*) from urban and non-urban estuaries of Puget Sound. NOAA Tech. Memo. NMFS-NWFSC-8, 112 p.

Warner, E. 1996. Muckleshoot Tribes Fisheries Department. Personal communication. November 6, 1996.

Weston, Roy F., Inc. 1997. Comprehensive RCRA Facility Investigation Report, Boeing-Plant 2, Seattle Tukwila, Washington. Prepared for the Boeing Company, Boeing Information Support Services, Safety, Health, and Environmental Affairs. August, 1997.

**APPENDIX A**

**ANALYTICAL CHEMISTRY AND SAMPLE LOCATION DATA**

This appendix contains tables of the data collected in the Duwamish Waterway Sediment Contaminant Characterization Study. The first two tables, A-1 and A-2, contain general information on the sample locations and sediment characteristics (Table A-1) and the measured and calculated values for PCBs and PCTs (Table A-2). The remaining tables contain data on the PCB congeners measured for each of the samples, presented in tables by region, as defined in this report. In Tables A-2 through A-8, the values are reported to two significant figures in exponential format. The following section provides a data table index, and descriptive information on the data fields and units of measurement.

Electronic copies of the Duwamish Waterway sediment investigation data base are available in .dbf format upon request by contacting:

Mr. Greg Baker  
NOAA/DAC/NW  
7600 Sand Point Way, NE  
Seattle, WA 98115

**Table A-1: Sediment sample locations and sediment characteristics.**

**FIELD\_ID** - the sample identification (ID) number as reported on the chain-of-custody and sample labels. Samples were identified using procedures outlined in Sample Identification and Labeling Procedures in the Sampling and Analysis Plan (NOAA, 1997, Section 2.8.5). The identification number is composed of a general identifier (DAC) and a habitat region mnemonic (CH, EIT, EST, WEST, WIT, or WST), followed by a sub-stratum number (01, 02, . . .) and a sampling segment number (01, 02, . . .). The habitat mnemonics are defined as follows:

CH	-	Channel region
EIT	-	East Intertidal region
EST	-	East Subtidal regions (excluding Weston)
WEST	-	Weston study area (East Subtidal habitat)
WIT	-	West Intertidal regions
WST	-	West Subtidal region

**LATITUDE** - Latitude at which the sample was collected in the field. Coordinates are in NAD-83, decimal degrees; Northern Hemisphere.

**LONGITUDE** - Longitude at which the sample was collected in the field. Coordinates are in NAD-83, decimal degrees; Western Hemisphere.

Users of the data should note that the latitude and longitude coordinates used by the Trustees are derived from the NOAA navigational chart (#18450, 1992) and are expressed using the horizontal datum NAD-83. As a result, these data will not plot accurately on maps that use other coordinate systems or datums, such as the U.S. Geological Survey (USGS) topographic map for South Seattle (NAD-27). Individuals who wish to plot the results of this investigation on the USGS map of the Waterway will need to shift the base coverage 23 meters south, 93 meters west for a conversion from NAD-27 to NAD-83.

**AREA REP** - Area represented by each sample, in acres, derived by dividing the estimated area for each sub-stratum by the number of samples taken in that sub-stratum.

**REPLICATE** - the replicate status of each sample; original, duplicate, or triplicate.

**SILT** - Grain size analysis results, in percent dry weight.

**CLAY** - Grain size analysis results, in percent dry weight.

**GRAVEL** - Grain size analysis results, in percent dry weight.

**SAND** - Grain size analysis results, in percent dry weight.

**TOC** - Total Organic Carbon, in percent dry weight.

**PCT SOLIDS** - total solids, in percent dry weight.

**Table A-2:** Total PCBs and PCTs.

**FIELD\_ID** - the sample identification (ID) number as reported on the chain-of-custody and sample labels. Samples were identified using procedures outlined in Sample Identification and Labeling Procedures in the Sampling and Analysis Plan (NOAA, 1997, Section 2.8.5). The identification number is composed of a general identifier (DAC) and a habitat region mnemonic (CH, EIT, EST, WEST, WIT, or WST), followed by a sub-stratum number (01, 02, . . .) and a sampling segment number (01, 02, . . .). The habitat mnemonics are defined as follows:

CH	-	Channel region
EIT	-	East Intertidal region
EST	-	East Subtidal regions (excluding Weston)
WEST	-	Weston study area (East Subtidal habitat)
WIT	-	West Intertidal regions
WST	-	West Subtidal region

**REPLICATE** - the replicate status of each sample; original, duplicate, or triplicate.

**PCBs + PCTs** - the sum of the concentrations of the reported congeners (results of the HPLC/PDA analysis), plus the total concentrations of the unidentified congeners, in nanograms per gram dry weight. (Concentrations of unidentified congeners are calculated using the response factor of PCB101 when present, or PCB138 if PCB 101 is not present, or average response factor over all congeners if neither is present.) NR indicates the concentration could not be reported due to analytical interferences.

**Qualifier (PCBs + PCTs)** - A qualifier associated with the value in the PCBs + PCTs column for the sample. A blank in the Qualifier column indicates that the associated PCBs + PCTs value met all QC criteria as specified in the analytical method and project QAP; a "U" indicates that the result was not detected at the reported concentration; a "J" indicates that the reported concentration may not meet all the accuracy or precision

specifications in the QAP; a "7" indicates that the analyte was determined to be "not detected" due to method blank results; a "10" indicates that the associated value was estimated due to Standard Reference Material results; an "11" indicates that the associated value was estimated because the reported result was less than the calculated Method Detection Limit.

Total PCTs - Total polychlorinated terphenyls (PCTs) obtained by GC/ECD.

Qualifier (Total PCTs) - A qualifier associated with the value in the Total PCTs column for the sample, as defined by the QAP. For code information, refer to the description for Qualifier (PCBs + PCTs) above.

Total PCBs (calc) - Total PCB concentration calculated by subtracting the concentrations of Total PCTs from the concentrations of PCBs + PCTs, in nanograms per gram dry weight (that is, parts per billion). NR indicates that the result could not be reported due to analytical interferences.

Qualifier (Total PCBs) - A qualifier associated with the value in the Total PCBs column for the sample, as defined by the QAP.; For code information, refer to the description for Qualifier (PCBs + PCTs) above.

**Tables A-3 through A-8: PCB congener concentrations.**

Tables A-3 through A-8 list the analysis results for PCB congeners and total PCBs and PCTs. The results are given for each FIELD\_ID, with a concentration column (ppb) and a qualifier column (Q). Each table represents data from a specific sub-region, as described in this report:

**Table A-3** - Results of analysis from sediments collected in the East Intertidal region;

**Table A-4** - Results of analysis from sediments collected in the East Subtidal region;

**Table A-5** - Results of analysis from sediments collected in the Channel region;

**Table A-6** - Results of analysis from sediments collected in the Weston study area (part of the East Subtidal region);

**Table A-7** - Results of analysis from sediments collected in the West Subtidal region; and,

**Table A-8** - Results of analysis from sediments collected in the West Intertidal region.

Analyte - The PCB congener, total PCBs, or total PCTs, as indicated. Specific congeners reported include: PCB77, PCB101, PCB105, PCB110, PCB118, PCB126, PCB128, PCB138, PCB153, PCB156, PCB157, PCB169, PCB170, PCB180, and PCB189. Although the reported congeners are the major component of their respective peaks, the laboratory reports that the following congeners are known to co-elute with other

compounds, as follows: PCB101 co-elutes with congeners 95, 99, 149, and 84; PCB105 co-elutes with congeners 37, 167, and 79; PCB110 co-elutes with congener 129; PCB128 co-elutes with congener 123; PCB153 co-elutes with dieldrin, trans-nonachlor, and congener 87; PCB157 co-elutes with congener 127; PCB170 co-elutes with congeners 193 and 194. The co-eluting compounds may or may not be present in a given sample, and there may be other, minor components that also co-elute with the congeners reported.

ppb - The average analyte concentration, for all replicates analyzed for each FIELD\_ID, in parts per billion dry weight. NR indicates that the result could not be reported due to analytical interferences.

Q - A qualifier associated with the value in the associated ppb column for the sample, as defined by the QAP. For code information, refer to the description for Qualifier (PCBs + PCTs) above.

Table A-1. Sediment sample locations and sediment characteristics

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-CH01-01	047.5176000	122.3056167	2.15	original	56.91	15.87	0.00	27.22	1.94	49.63
DAC-CH01-02	047.5154000	122.3053167	2.15	original	68.71	24.21	0.00	7.08	2.61	39.40
DAC-CH01-03	047.5148833	122.3052167	2.15	original	68.19	22.89	0.00	8.92	2.33	39.83
DAC-CH01-04	047.5127500	122.3035667	2.15	original	58.83	28.84	0.00	12.33	3.55	32.80
DAC-CH02-01	047.5226833	122.3078833	2.17	original	69.72	14.88	0.00	15.40	1.78	52.83
DAC-CH02-02-R	047.5214000	122.3071000	2.17	original	67.35	15.69	0.00	16.96	1.53	50.21
DAC-CH02-03	047.5195833	122.3066500	2.17	original	71.64	19.92	0.00	8.44	2.28	44.04
DAC-CH02-03	047.5195833	122.3066500	2.17	duplicate						44.04
DAC-CH03-01	047.5269333	122.3097833	0.85	original	73.88	20.36	0.00	5.76	1.91	48.43
DAC-CH03-02	047.5261167	122.3091000	0.85	original	66.92	18.10	0.00	14.98	1.74	50.12
DAC-CH03-03	047.5254167	122.3089333	0.85	original	71.93	19.36	0.00	8.71	1.89	49.57
DAC-CH03-04	047.5243000	122.3083667	0.85	original	73.30	17.68	0.00	9.03	1.66	52.52
DAC-CH04-01	047.5329000	122.3204000	2.98	original	51.67	18.45	0.23	29.65	1.56	56.34
DAC-CH04-02	047.5305500	122.3158000	2.98	original	40.59	9.94	0.12	49.34	1.00	58.42
DAC-CH04-02	047.5305500	122.3158000	2.98	duplicate	42.30	10.35	0.13	47.22	1.03	
DAC-CH04-03	047.5291167	122.3131333	2.98	original	66.00	21.45	0.46	12.09	2.37	48.22
DAC-CH04-04-R	047.5284500	122.3128667	2.98	original	63.19	14.01	0.00	22.80	1.24	56.70
DAC-CH05-01	047.5341833	122.3222000	0.60	original	34.96	12.62	2.72	49.71	1.20	60.38
DAC-CH05-02	047.5337667	122.3220333	0.60	original	44.93	15.17	0.06	39.84	1.50	57.27
DAC-CH06-01	047.5364667	122.3261333	1.10	original	56.63	18.15	0.00	25.22	1.74	55.49
DAC-CH06-02	047.5355500	122.3245500	1.10	original	48.98	13.99	0.00	37.03	1.65	58.77
DAC-CH06-03	047.5349833	122.3238500	1.10	original	50.54	17.97	0.31	31.17	1.79	54.19
DAC-CH07-01	047.5418333	122.3335500	2.93	original	61.87	18.52	1.24	18.38	1.84	54.89
DAC-CH07-02	047.5392667	122.3304667	2.93	original	66.23	19.99	0.00	13.79	1.95	52.37
DAC-CH07-02	047.5392667	122.3304667	2.93	duplicate						52.15
DAC-CH07-02	047.5392667	122.3304667	2.93	triplicate						52.31
DAC-CH07-03	047.5376500	122.3279167	2.93	original	62.53	21.81	0.00	15.66	2.21	49.90
DAC-CH08-01	047.5442333	122.3368167	3.50	original	67.80	25.27	0.00	6.94	2.35	47.87
DAC-CH08-02	047.5435333	122.3363667	3.50	original	58.55	17.77	0.00	23.68	2.01	54.11
DAC-CH09-01	047.5537333	122.3419667	5.73	original	67.14	27.71	0.00	5.15	1.94	50.39
DAC-CH09-02	047.5521333	122.3407833	5.73	original	66.79	27.97	0.00	5.24	2.21	46.39
DAC-CH09-03	047.5467500	122.3386667	5.73	original	70.17	23.78	0.00	6.05	2.30	48.80
DAC-CH10-01	047.5559833	122.3435000	0.95	original	60.31	35.24	0.02	4.42	2.08	48.99
DAC-CH10-02	047.5559333	122.3432333	0.95	original	41.05	36.79	3.80	18.19	1.61	52.92
DAC-CH11-01	047.5605833	122.3458500	2.07	original	51.89	32.34	0.66	15.11	1.47	52.99
DAC-CH11-02	047.5589167	122.3451333	2.07	original	48.43	38.63	0.22	12.73	1.68	52.01
DAC-CH11-03	047.5578500	122.3442333	2.07	original	30.72	33.10	14.75	21.43	1.27	54.36
DAC-CH12-01-2	047.5625167	122.3464667	2.60	original	48.02	22.48	9.70	19.81	1.73	56.17
DAC-CH12-02	047.5618667	122.3466833	2.60	original	54.17	33.57	0.16	12.10	1.81	52.59

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-CH13-01	047.5675333	122.3491833	2.90	original	26.95	18.34	3.42	51.29	1.27	63.62
DAC-CH13-02	047.5660333	122.3484500	2.90	original	57.69	38.04	0.00	4.27	1.94	49.47
DAC-CH13-02	047.5660333	122.3484500	2.90	duplicate	57.61	38.17	0.00	4.22	1.97	
DAC-CH13-03	047.5647833	122.3478833	2.90	original	56.32	39.28	0.43	3.97	2.09	47.60
DAC-EIT01-01	047.5038667	122.2963667	0.35	original	2.73	0.80	0.00	96.48	0.12	74.87
DAC-EIT01-02	047.5030667	122.2967333	0.35	original	8.14	2.70	0.00	89.15	0.49	72.51
DAC-EIT02-01	047.5110833	122.2959167	0.33	original	40.59	11.75	23.28	24.38	1.87	57.64
DAC-EIT02-02	047.5106667	122.2945833	0.33	original	46.69	15.33	0.64	37.34	1.31	66.55
DAC-EIT02-04	047.5100833	122.2928500	0.33	original	19.03	5.37	24.17	51.42	1.33	69.80
DAC-EIT03-01	047.5151333	122.3044000	0.35	original	66.67	19.04	0.00	14.29	2.29	49.97
DAC-EIT03-01	047.5151333	122.3044000	0.35	duplicate	66.46	18.81	0.00	14.74	2.40	
DAC-EIT03-02	047.5147500	122.3041667	0.35	original	15.21	5.22	0.02	79.55	1.14	70.36
DAC-EIT03-03	047.5137167	122.3037333	0.35	original	69.63	17.31	0.00	13.06	1.98	47.88
DAC-EIT03-04	047.5131500	122.3027167	0.35	original	10.72	3.62	0.55	85.11	0.44	74.36
DAC-EIT04-01	047.5158833	122.3046000	0.10	original	4.42	2.23	35.27	58.07	0.46	71.96
DAC-EIT04-02	047.5158333	122.3045500	0.10	original	35.61	11.32	1.90	51.17	1.43	59.69
DAC-EIT04-03	047.5158167	122.3044833	0.10	original	24.12	6.49	10.37	59.01	1.87	58.84
DAC-EIT05-01	047.5210167	122.3062333	1.55	original	62.87	18.16	0.78	18.20	1.92	45.72
DAC-EIT05-01	047.5210167	122.3062333	1.55	duplicate						46.17
DAC-EIT05-02	047.5192333	122.3053333	1.55	original	9.41	4.05	0.06	86.47	0.38	76.86
DAC-EIT06-01	047.5238833	122.3074333	0.87	original	12.28	5.60	1.33	80.79	0.88	71.44
DAC-EIT06-02	047.5225833	122.3069667	0.87	original	11.99	4.94	45.74	37.34	1.67	62.60
DAC-EIT06-03	047.5217833	122.3066667	0.87	original	43.18	11.16	4.47	41.19	1.30	60.09
DAC-EIT07-01	047.5361833	122.3186500	0.14	original	15.16	7.23	36.33	41.27	1.27	69.63
DAC-EIT07-02-1	047.5355833	122.3190500	0.14	original	10.91	4.67	34.52	49.90	1.49	68.79
DAC-EIT07-02-1	047.5355833	122.3190500	0.14	duplicate	9.79	4.33	39.41	46.47	1.49	
DAC-EIT07-03	047.5351167	122.3197000	0.14	original	6.10	3.58	25.88	64.45	0.54	80.06
DAC-EIT07-04	047.5344333	122.3205833	0.14	original	13.43	6.57	1.66	78.34	1.08	74.41
DAC-EIT07-05-2	047.5344833	122.3205000	0.14	original	3.39	1.81	13.62	81.18	0.30	73.77
DAC-EIT08-01-R	047.5371167	122.3189333	0.23	original	22.85	9.93	0.20	67.02	3.27	64.39
DAC-EIT08-02	047.5368167	122.3186833	0.23	original	10.02	4.20	64.19	21.59	1.40	76.61
DAC-EIT08-02	047.5368167	122.3186833	0.23	duplicate	11.81	4.90	55.93	27.35	1.37	
DAC-EIT08-03	047.5364167	122.3185833	0.23	original	19.10	7.52	18.96	54.42	1.51	67.21
DAC-EIT08-03	047.5364167	122.3185833	0.23	duplicate						67.92
DAC-EIT09-01	047.5366333	122.3254333	0.68	original	15.63	6.43	2.03	75.91	0.76	71.90
DAC-EIT09-02	047.5361500	122.3247333	0.68	original	15.06	5.27	0.12	79.55	0.54	68.73
DAC-EIT09-03	047.5356333	122.3235000	0.68	original	4.34	2.13	45.98	47.55	0.54	75.97
DAC-EIT09-03	047.5356333	122.3235000	0.68	duplicate						73.13
DAC-EIT09-04	047.5351333	122.3227333	0.68	original	1.20	0.40	18.76	79.64	0.21	75.75

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-EIT10-01	047.5476000	122.3349667	0.95	original	5.67	4.11	47.49	42.73	1.55	67.33
DAC-EIT10-01	047.5476000	122.3349667	0.95	duplicate	6.25	4.64	42.38	46.72	1.44	
DAC-EIT10-02	047.5453500	122.3362000	0.95	original	5.10	1.43	25.45	68.02	0.35	74.89
DAC-EIT11-01-2	047.5496000	122.3386167	0.60	original	1.59	1.36	44.61	52.44	0.30	80.14
DAC-EIT11-02	047.5490833	122.3383833	0.60	original	6.89	5.37	1.60	86.14	1.11	70.16
DAC-EIT11-03	047.5482333	122.3380833	0.60	original	64.66	29.68	0.00	5.66	1.64	63.78
DAC-EIT12-01	047.5546000	122.3416500	0.40	original	2.46	1.83	16.72	79.00	0.79	75.18
DAC-EIT12-02-5	047.5545333	122.3407000	0.40	original	1.98	1.90	12.09	84.04	0.34	76.07
DAC-EIT13-01	047.5609833	122.3447500	0.60	original	3.33	2.91	0.81	92.95	0.35	73.25
DAC-EIT13-02	047.5598000	122.3441833	0.60	original	0.66	1.12	28.76	69.47	0.14	84.71
DAC-EIT13-03	047.5585000	122.3433167	0.60	original	62.52	35.38	0.00	2.11	3.63	59.62
DAC-EIT13-03	047.5585000	122.3433167	0.60	duplicate						60.01
DAC-EIT13-03	047.5585000	122.3433167	0.60	triplicate						60.09
DAC-EIT14-01	047.5633333	122.3451333	0.85	original	3.55	2.41	44.89	49.15	0.74	77.14
DAC-EIT14-01	047.5633333	122.3451333	0.85	duplicate	4.02	2.67	37.06	56.24	0.73	
DAC-EIT14-02	047.5618333	122.3446833	0.85	original	0.46	0.49	6.12	92.94	0.07	78.44
DAC-EITUPRVR01	047.5016833	122.2968833	0.30	original	38.85	9.66	0.00	51.49	1.17	62.51
DAC-EITUPRVR02	047.5004167	122.2951000	0.30	original	34.14	8.59	0.00	57.27	0.80	65.65
DAC-EST01-01	047.5095667	122.2928167	1.58	original	0.32	0.30	1.06	98.32	0.16	77.09
DAC-EST01-02	047.5071833	122.2923833	1.58	original	0.14	0.13	2.09	97.64	0.07	81.87
DAC-EST01-02	047.5071833	122.2923833	1.58	duplicate	0.13	0.13	1.94	97.79	0.07	
DAC-EST01-03	047.5056167	122.2936333	1.58	original	6.33	2.53	2.52	88.61	0.34	78.04
DAC-EST01-04	047.5051167	122.2941833	1.58	original	0.15	0.23	13.60	86.02	0.07	81.62
DAC-EST02-02	047.5102500	122.2940167	1.20	original	0.00	0.19	0.26	99.56	0.08	79.77
DAC-EST02-03	047.5097833	122.2930500	1.20	original	0.14	0.38	3.77	95.71	0.20	83.95
DAC-EST03-01-R	047.5123667	122.3023000	0.74	original	8.39	3.60	1.18	86.83	0.63	69.21
DAC-EST03-02-1	047.5125333	122.3003833	0.74	original	0.15	0.69	0.95	98.22	0.11	74.91
DAC-EST03-03-R	047.5125167	122.3016667	0.74	original	0.19	0.37	4.24	95.20	0.59	74.90
DAC-EST03-04	047.5109000	122.2965333	0.74	original	3.55	1.67	0.15	94.62	0.25	72.36
DAC-EST03-04	047.5109000	122.2965333	0.74	duplicate						74.17
DAC-EST03-05-R	047.5127000	122.3016333	0.74	original	11.44	4.19	0.21	84.16	0.47	69.27
DAC-EST04-01	047.5141167	122.3039333	0.52	original	44.60	11.78	0.00	43.62	1.42	57.41
DAC-EST04-02	047.5135167	122.3039833	0.52	original	18.36	3.67	0.87	77.11	0.61	64.29
DAC-EST04-03	047.5129500	122.3030000	0.52	original	2.59	1.24	1.98	94.18	0.13	76.92
DAC-EST04-04	047.5126500	122.3022167	0.52	original	0.62	0.83	3.19	95.36	0.39	77.63
DAC-EST04-05-R	047.5125167	122.3024333	0.52	original	0.37	0.58	6.09	92.96	0.12	73.48
DAC-EST05-01	047.5160333	122.3050167	0.25	original	54.26	12.79	0.00	32.95	1.31	55.01
DAC-EST05-02-R	047.5155667	122.3047333	0.25	original	64.01	14.53	0.00	21.46	1.57	53.14
DAC-EST06-01	047.5177500	122.3055833	0.38	original	53.50	13.43	0.00	33.07	1.36	55.58

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-EST06-01	047.5177500	122.3055833	0.38	duplicate						56.00
DAC-EST06-02	047.5176667	122.3051000	0.38	original	74.96	17.87	0.00	7.17	1.74	49.88
DAC-EST06-03	047.5174333	122.3052000	0.38	original	68.15	14.51	0.00	17.34	1.30	56.05
DAC-EST06-04	047.5171500	122.3049333	0.38	original	70.39	16.68	0.00	12.93	1.62	51.56
DAC-EST06-05-R	047.5171833	122.3048667	0.38	original	72.09	17.27	0.00	10.65	1.78	49.46
DAC-EST06-06	047.5167833	122.3053167	0.38	original	48.02	15.38	0.00	36.61	1.30	54.09
DAC-EST06-07	047.5161833	122.3050333	0.38	original	51.95	14.50	0.00	33.56	1.35	53.63
DAC-EST06-07	047.5161833	122.3050333	0.38	duplicate						53.31
DAC-EST06-08	047.5166500	122.3048167	0.38	original	68.18	17.42	0.00	14.40	1.54	50.00
DAC-EST06-08	047.5166500	122.3048167	0.38	duplicate	67.62	17.43	0.00	14.95	1.52	
DAC-EST07-01	047.5194500	122.3024333	0.76	original	67.72	31.76	0.00	0.52	2.41	46.04
DAC-EST07-02	047.5193167	122.3031167	0.76	original	68.56	31.22	0.00	0.22	2.54	47.47
DAC-EST07-03	047.5191167	122.3035667	0.76	original	70.74	28.88	0.00	0.38	2.78	45.95
DAC-EST07-04	047.5188167	122.3036333	0.76	original	71.04	28.50	0.00	0.46	2.74	44.79
DAC-EST07-05	047.5185667	122.3042333	0.76	original	73.55	25.35	0.00	1.10	2.27	45.29
DAC-EST07-06	047.5185500	122.3049167	0.76	original	73.84	24.74	0.00	1.43	2.64	45.16
DAC-EST07-07-R	047.5189333	122.3056500	0.76	original	71.71	17.85	0.00	10.44	1.82	49.21
DAC-EST07-08	047.5180000	122.3056167	0.76	original	61.23	13.27	0.00	25.50	1.24	55.90
DAC-EST08-01	047.5204000	122.3065167	0.70	original	71.90	17.88	0.00	10.22	1.84	49.97
DAC-EST08-02	047.5197000	122.3063500	0.70	original	74.24	20.03	0.00	5.73	2.07	46.74
DAC-EST08-02	047.5197000	122.3063500	0.70	duplicate	74.16	20.22	0.00	5.62	2.08	
DAC-EST08-03	047.5193000	122.3061000	0.70	original	72.01	16.44	0.00	11.55	1.65	51.28
DAC-EST09-01	047.5236833	122.3078167	0.42	original	69.30	16.08	0.01	14.61	1.52	49.92
DAC-EST09-02	047.5233833	122.3078167	0.42	original	74.20	17.07	0.00	8.73	1.64	51.01
DAC-EST09-03	047.5229167	122.3073167	0.42	original	41.42	12.16	0.01	46.41	1.38	58.21
DAC-EST09-04	047.5221167	122.3069667	0.42	original	47.41	12.29	0.57	39.72	1.20	58.72
DAC-EST09-05	047.5215833	122.3068333	0.42	original	43.85	13.22	0.38	42.55	1.32	57.57
DAC-EST09-06	047.5210500	122.3068500	0.42	original	74.28	16.73	0.00	8.99	1.42	51.06
DAC-EST10-01	047.5246167	122.3081833	0.35	original	47.02	13.60	0.37	39.01	1.30	50.93
DAC-EST10-02-R	047.5243500	122.3079333	0.35	original	44.64	15.27	0.73	39.36	2.23	42.61
DAC-EST11-01-R	047.5271333	122.3095333	0.26	original	72.84	19.08	0.00	8.08	2.03	46.89
DAC-EST11-02	047.5268000	122.3092167	0.26	original	76.85	19.76	0.00	3.39	1.88	47.69
DAC-EST11-02	047.5268000	122.3092167	0.26	duplicate	76.87	19.74	0.00	3.39	1.87	
DAC-EST11-03	047.5266333	122.3090000	0.26	original	73.40	20.10	0.06	6.43	1.97	49.41
DAC-EST11-03	047.5266333	122.3090000	0.26	duplicate						49.41
DAC-EST11-04	047.5263000	122.3089000	0.26	original	66.36	15.55	0.00	18.09	1.54	53.82
DAC-EST11-05	047.5259333	122.3086833	0.26	original	70.26	17.62	1.12	11.00	1.71	49.79
DAC-EST11-06	047.5256167	122.3086500	0.26	original	63.47	14.92	0.63	20.98	1.55	55.72
DAC-EST11-07	047.5255167	122.3085667	0.26	original	73.35	18.81	0.00	7.83	1.79	51.24

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-EST11-08	047.5253000	122.3085333	0.26	original	68.57	17.69	0.04	13.70	1.52	53.73
DAC-EST11-09	047.5253667	122.3084500	0.26	original	20.20	7.98	1.86	69.96	1.19	61.66
DAC-EST11-10	047.5252000	122.3085833	0.26	original	71.77	17.29	0.00	10.94	1.59	51.47
DAC-EST11-11-R	047.5252167	122.3083667	0.26	original	27.21	8.62	2.81	61.37	0.85	59.37
DAC-EST11-12	047.5246833	122.3082667	0.26	original	58.82	15.26	0.00	25.92	1.46	52.50
DAC-EST12-01	047.5362500	122.3187500	0.59	original	41.33	15.76	10.78	32.13	2.10	49.78
DAC-EST12-02	047.5361333	122.3189500	0.59	original	56.00	21.09	0.34	22.56	1.96	49.53
DAC-EST12-03	047.5360500	122.3194667	0.59	original	68.19	26.57	0.09	5.14	2.32	44.29
DAC-EST12-03	047.5360500	122.3194667	0.59	duplicate						44.69
DAC-EST12-03	047.5360500	122.3194667	0.59	triplicate						44.19
DAC-EST12-04	047.5357167	122.3197667	0.59	original	65.52	26.83	0.09	7.56	2.34	47.90
DAC-EST12-05	047.5355000	122.3195833	0.59	original	57.55	20.89	0.07	21.49	2.06	50.32
DAC-EST12-06	047.5351667	122.3202000	0.59	original	60.13	22.58	0.00	17.29	2.08	47.00
DAC-EST12-07-1	047.5345500	122.3206833	0.59	original	6.69	2.00	3.08	88.23	0.31	75.52
DAC-EST12-08-1	047.5347833	122.3219333	0.59	original	39.16	15.06	0.44	45.34	1.70	55.34
DAC-EST12-09	047.5346833	122.3215833	0.59	original	52.28	18.19	0.02	29.51	1.85	52.64
DAC-EST12-09	047.5346833	122.3215833	0.59	duplicate	52.65	18.08	0.05	29.22	1.82	
DAC-EST12-10	047.5341833	122.3212667	0.59	original	2.83	1.68	1.83	93.66	0.13	74.65
DAC-EST13-01	047.5362833	122.3251833	0.38	original	30.46	9.10	0.05	60.39	0.93	63.46
DAC-EST13-02	047.5367167	122.3258833	0.38	original	62.65	21.30	0.00	16.06	2.37	49.39
DAC-EST13-03	047.5369500	122.3259500	0.38	original	67.49	21.19	0.00	11.32	2.76	44.74
DAC-EST13-04	047.5360333	122.3247000	0.38	original	30.77	10.29	0.21	58.73	0.98	64.50
DAC-EST13-05	047.5351333	122.3231000	0.38	original	37.67	12.30	0.02	50.00	1.53	58.71
DAC-EST13-06	047.5348833	122.3230667	0.38	original	49.75	13.49	0.41	36.35	1.79	60.12
DAC-EST14-01-R	047.5391500	122.3292667	1.16	original	62.84	19.63	0.02	17.51	1.84	51.09
DAC-EST14-02	047.5383833	122.3286167	1.16	original	55.92	20.21	0.19	23.68	2.02	53.43
DAC-EST14-03-1	047.5381667	122.3279167	1.16	original	68.51	21.59	0.00	9.90	2.00	49.66
DAC-EST14-04	047.5377000	122.3273500	1.16	original	69.00	22.72	0.00	8.28	2.22	46.34
DAC-EST14-05	047.5371333	122.3266667	1.16	original	67.28	21.33	0.00	11.38	2.30	47.47
DAC-EST15-01	047.5416833	122.3324000	1.57	original	67.41	24.73	0.00	7.86	2.34	49.95
DAC-EST15-02	047.5410500	122.3315667	1.57	original	63.74	23.14	0.02	13.11	2.25	50.37
DAC-EST15-03	047.5397000	122.3304167	1.57	original	60.75	21.33	0.00	17.93	2.24	51.61
DAC-EST16-01	047.5424167	122.3336000	1.16	original	67.72	20.42	0.00	11.86	1.86	49.51
DAC-EST16-02	047.5425667	122.3326667	1.16	original	66.17	27.26	0.06	6.51	2.22	46.76
DAC-EST16-03	047.5424667	122.3326333	1.16	original	63.58	27.43	0.00	9.00	2.18	48.46
DAC-EST16-04	047.5427333	122.3309167	1.16	original	59.67	27.14	0.18	13.01	1.86	48.52
DAC-EST16-05	047.5425667	122.3303000	1.16	original	57.75	29.26	0.00	12.99	1.91	49.96
DAC-EST17-01	047.5439167	122.3362667	0.60	original	61.35	27.62	0.90	10.13	2.04	52.49
DAC-EST17-02-2	047.5434000	122.3356667	0.60	original	66.76	27.59	0.06	5.59	2.27	46.23

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-EST18-01	047.5470167	122.3354667	1.10	original	42.83	20.41	6.91	29.85	2.13	54.62
DAC-EST18-02-R	047.5462667	122.3363000	1.10	original	44.35	23.26	9.11	23.28	1.33	55.04
DAC-EST18-03	047.5461000	122.3365667	1.10	original	53.91	23.73	0.87	21.49	1.87	55.62
DAC-EST18-04	047.5456833	122.3366167	1.10	original	38.34	19.58	4.19	37.89	1.46	58.04
DAC-EST18-04	047.5456833	122.3366167	1.10	duplicate	36.17	18.46	5.11	40.26	1.48	
DAC-EST19-01	047.5547500	122.3416500	1.77	original	57.68	35.84	0.15	6.33	2.10	50.24
DAC-EST19-02	047.5537667	122.3410167	1.77	original	60.88	35.01	0.06	4.04	2.23	50.96
DAC-EST19-03-1	047.5524667	122.3407833	1.77	original	63.64	30.94	0.00	5.42	2.15	49.02
DAC-EST19-03-1	047.5524667	122.3407833	1.77	duplicate						48.88
DAC-EST19-04	047.5508167	122.3395667	1.77	original	59.02	30.00	0.04	10.94	2.00	50.63
DAC-EST19-04	047.5508167	122.3395667	1.77	duplicate	58.86	30.01	0.13	11.00	1.94	
DAC-EST19-05	047.5483333	122.3386500	1.77	original	64.62	25.79	0.07	9.52	1.88	49.49
DAC-EST19-06	047.5479667	122.3383833	1.77	original	64.01	22.60	0.00	13.40	1.98	50.04
DAC-EST19-06	047.5479667	122.3383833	1.77	duplicate						50.20
DAC-EST20-01	047.5570167	122.3406167	1.15	original	58.61	40.26	0.09	1.03	1.78	47.83
DAC-EST20-02	047.5569500	122.3423333	1.15	original	60.35	38.56	0.08	1.01	2.07	49.60
DAC-EST20-03	047.5565833	122.3417500	1.15	original	58.16	40.54	0.00	1.29	1.94	50.62
DAC-EST20-04	047.5564333	122.3412167	1.15	original	54.07	36.06	1.22	8.65	1.92	50.78
DAC-EST20-05	047.5555833	122.3422500	1.15	original	54.12	31.26	1.45	13.18	1.71	55.03
DAC-EST20-06	047.5563500	122.3399500	1.15	original	48.90	36.94	1.38	12.77	2.21	48.19
DAC-EST21-01	047.5601667	122.3447667	0.85	original	56.49	36.56	0.02	6.93	1.89	51.44
DAC-EST21-02	047.5592167	122.3441000	0.85	original	56.18	37.12	0.00	6.70	1.83	48.20
DAC-EST21-03	047.5583167	122.3435833	0.85	original	28.30	15.13	0.44	56.14	1.47	47.26
DAC-EST21-04	047.5573167	122.3428500	0.85	original	54.25	36.06	1.32	8.37	1.91	48.62
DAC-EST22-01	047.5639500	122.3465667	1.48	original	44.50	25.90	6.37	23.22	1.42	56.11
DAC-EST22-02	047.5631833	122.3462333	1.48	original	54.96	29.24	0.08	15.72	2.39	52.40
DAC-EST22-03	047.5624500	122.3458167	1.48	original	58.39	38.79	0.00	2.82	2.15	50.96
DAC-EST22-04	047.5616667	122.3454167	1.48	original	56.02	38.51	0.25	5.21	2.33	50.52
DAC-EST22-04	047.5616667	122.3454167	1.48	duplicate						50.57
DAC-EST22-04	047.5616667	122.3454167	1.48	triplicate						50.54
DAC-EST23-01	047.5687167	122.3493667	4.33	original	3.56	3.32	4.47	88.65	0.22	76.32
DAC-EST23-02	047.5686167	122.3469167	4.33	original	55.56	35.26	3.88	5.30	1.88	50.14
DAC-EST23-03	047.5673000	122.3474167	4.33	original	57.09	37.45	0.00	5.46	1.73	51.34
DAC-EST23-04	047.5678167	122.3466333	4.33	original	56.02	38.59	0.00	5.39	1.76	48.39
DAC-EST23-05	047.5650167	122.3468000	4.33	original	40.28	23.29	2.96	33.47	1.56	57.92
DAC-EST23-06	047.5664167	122.3462667	4.33	original	57.41	34.50	0.50	7.59	1.67	53.72
DAC-ESTUPRVR01	047.5016500	122.2973333	1.40	original	0.18	0.17	10.97	88.68	0.65	82.74
DAC-WEST01	047.5273833	122.3102000	0.56	original	59.03	18.65	0.10	22.22	1.90	52.21
DAC-WEST02	047.5281833	122.3110500	0.56	original	26.11	9.08	0.53	64.28	0.85	56.44

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-WEST03	047.5285333	122.3120000	0.56	original	22.17	7.99	0.19	69.66	1.02	62.11
DAC-WEST04	047.5291500	122.3127167	0.56	original	60.89	18.61	0.00	20.50	1.79	51.04
DAC-WEST05	047.5300833	122.3149500	0.56	original	37.39	11.22	0.34	51.05	1.23	57.62
DAC-WEST06	047.5311333	122.3169833	0.56	original	53.02	12.82	0.00	34.17	1.20	58.52
DAC-WEST07	047.5322667	122.3185333	0.56	original	38.16	10.88	0.04	50.92	1.30	57.88
DAC-WEST08	047.5332333	122.3203833	0.56	original	10.17	3.66	0.08	86.09	0.31	70.24
DAC-WIT01-01	047.5090833	122.2929833	0.16	original	33.02	7.76	0.00	59.22	0.78	66.44
DAC-WIT01-02	047.5070333	122.2928167	0.16	original	51.95	13.05	0.00	35.00	1.59	59.96
DAC-WIT01-03	047.5070000	122.2929333	0.16	original	38.32	9.42	0.00	52.26	1.10	62.47
DAC-WIT01-04	047.5061833	122.2937833	0.16	original	43.86	12.50	0.47	43.16	1.10	63.32
DAC-WIT01-05	047.5052500	122.2955500	0.16	original	36.60	9.71	0.00	53.70	1.04	65.88
DAC-WIT02-01	047.5103000	122.2950167	0.20	original	43.64	13.19	0.84	42.34	1.53	59.21
DAC-WIT02-02	047.5099167	122.2939167	0.20	original	42.56	16.60	0.25	40.59	2.31	56.52
DAC-WIT03-01	047.5120500	122.3050000	1.15	original	60.85	17.07	0.12	21.96	1.72	52.66
DAC-WIT03-02	047.5115167	122.3036667	1.15	original	34.15	11.70	0.25	53.90	1.30	61.19
DAC-WIT03-03	047.5119833	122.3018500	1.15	original	40.97	13.07	0.00	45.97	0.95	63.73
DAC-WIT03-04	047.5116500	122.3020667	1.15	original	26.58	8.20	0.22	65.00	0.80	72.41
DAC-WIT03-04	047.5116500	122.3020667	1.15	duplicate						72.61
DAC-WIT03-05	047.5117167	122.2997333	1.15	original	64.93	15.30	0.00	19.77	1.92	54.72
DAC-WIT03-06	047.5104167	122.3023167	1.15	original	18.81	10.12	1.82	69.26	2.11	65.08
DAC-WIT04-01	047.5134000	122.3054833	0.25	original	58.53	15.85	0.00	25.63	1.96	52.05
DAC-WIT04-02	047.5127333	122.3057333	0.25	original	7.03	2.87	3.28	86.82	1.33	68.64
DAC-WIT05-01	047.5171333	122.3067667	0.50	original	34.67	12.92	0.00	52.41	1.59	63.10
DAC-WIT05-02	047.5165833	122.3067000	0.50	original	16.72	4.91	0.24	78.13	0.67	72.71
DAC-WIT05-03	047.5159667	122.3064667	0.50	original	29.67	8.88	0.90	60.54	0.93	67.18
DAC-WIT05-04	047.5154833	122.3065167	0.50	original	16.70	5.15	1.76	76.38	0.67	71.62
DAC-WIT06-01	047.5231833	122.3089500	0.90	original	6.34	2.89	44.91	45.86	0.39	66.86
DAC-WIT06-02	047.5221000	122.3088167	0.90	original	4.90	2.24	4.43	88.43	0.42	73.14
DAC-WIT06-03	047.5214000	122.3086833	0.90	original	6.36	2.67	10.23	80.75	0.79	71.38
DAC-WIT07-01	047.5265500	122.3106667	0.53	original	5.61	3.14	27.63	63.62	0.31	70.48
DAC-WIT07-01	047.5265500	122.3106667	0.53	duplicate						70.20
DAC-WIT07-02	047.5256333	122.3099333	0.53	original	29.96	6.42	23.27	40.35	0.67	73.53
DAC-WIT07-03	047.5246000	122.3094167	0.53	original	3.12	0.97	2.04	93.86	0.05	83.88
DAC-WIT08-01	047.5325333	122.3209333	0.62	original	17.30	5.49	8.45	68.77	0.80	70.21
DAC-WIT08-02	047.5322333	122.3201833	0.62	original	11.33	5.06	1.55	82.06	0.52	66.36
DAC-WIT08-03	047.5315167	122.3198167	0.62	original	0.96	1.16	5.52	92.36	0.22	73.85
DAC-WIT08-04	047.5303833	122.3172000	0.62	original	25.63	8.57	0.84	64.96	1.25	63.90
DAC-WIT08-05	047.5301833	122.3167500	0.62	original	37.89	10.91	0.13	51.08	1.15	58.41
DAC-WIT08-06	047.5298333	122.3162000	0.62	original	3.74	2.61	29.62	64.03	0.70	70.69

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-WIT09-01-R5	047.5342000	122.3238500	0.30	original	37.84	11.26	8.40	42.49	1.40	65.42
DAC-WIT09-02	047.5339500	122.3234333	0.30	original	10.75	5.52	26.21	57.52	0.91	77.45
DAC-WIT10-01	047.5369667	122.3281667	0.85	original	9.15	3.63	19.38	67.84	0.63	70.73
DAC-WIT10-01	047.5369667	122.3281667	0.85	duplicate						71.33
DAC-WIT10-02	047.5360000	122.3266667	0.85	original	17.46	12.52	15.54	54.48	1.27	65.30
DAC-WIT11-01	047.5392000	122.3323167	0.80	original	21.23	4.30	32.66	41.81	1.09	68.60
DAC-WIT11-02	047.5391667	122.3316333	0.80	original	27.88	4.25	1.03	66.84	0.32	73.79
DAC-WIT12-01-R	047.5607000	122.3500333	1.55	original	24.21	19.35	1.99	54.45	4.64	47.50
DAC-WIT12-02	047.5594000	122.3489667	1.55	original	46.61	21.52	0.87	31.00	1.77	48.85
DAC-WIT12-02	047.5594000	122.3489667	1.55	duplicate						48.34
DAC-WIT12-02	047.5594000	122.3489667	1.55	triplicate						47.56
DAC-WIT12-03	047.5591333	122.3500667	1.55	original	38.81	23.62	1.14	36.42	3.68	46.41
DAC-WIT12-04	047.5581667	122.3502833	1.55	original	30.62	12.22	0.64	56.52	1.17	62.50
DAC-WIT12-05	047.5581833	122.3491833	1.55	original	57.72	26.00	0.00	16.28	1.66	54.61
DAC-WIT12-06	047.5567333	122.3493167	1.55	original	42.22	11.47	10.07	36.23	0.91	51.52
DAC-WIT12-07	047.5563500	122.3484667	1.55	original	27.58	10.49	0.74	61.18	1.67	57.21
DAC-WIT12-08	047.5559333	122.3479500	1.55	original	15.00	6.72	34.98	43.30	0.60	67.51
DAC-WIT13-01	047.5602333	122.3479167	0.68	original	22.24	8.78	0.00	68.98	1.36	56.10
DAC-WIT13-02	047.5597500	122.3478333	0.68	original	53.89	24.43	0.00	21.68	0.79	59.74
DAC-WIT13-03	047.5589667	122.3471500	0.68	original	61.06	25.50	0.00	13.44	1.13	59.22
DAC-WIT13-04	047.5572000	122.3462833	0.68	original	2.34	1.61	0.32	95.73	0.26	72.73
DAC-WIT13-05	047.5569333	122.3448500	0.68	original	49.20	40.02	0.74	10.04	5.05	34.90
DAC-WIT13-06	047.5561167	122.3454333	0.68	original	1.95	0.41	4.82	92.82	0.09	78.64
DAC-WIT14-01	047.5674833	122.3501333	0.80	original	1.17	0.84	2.92	95.07	0.11	77.25
DAC-WIT14-02	047.5651333	122.3493833	0.80	original	3.27	1.31	8.40	87.02	0.14	75.61
DAC-WST01-01	047.5123833	122.3042333	0.70	original	24.65	5.54	0.11	69.70	1.31	63.04
DAC-WST01-02	047.5116833	122.3030333	0.70	original	55.32	15.34	0.00	29.34	1.63	51.09
DAC-WST02-01	047.5136667	122.3050667	1.10	original	11.78	3.02	0.24	84.95	0.36	71.72
DAC-WST02-02	047.5129167	122.3045000	1.10	original	56.42	23.74	0.00	19.84	2.54	40.05
DAC-WST03-01	047.5150500	122.3057833	0.80	original	38.71	8.47	0.00	52.82	0.89	61.55
DAC-WST03-02	047.5143667	122.3055667	0.80	original	35.54	8.96	0.00	55.51	0.93	60.07
DAC-WST03-03	047.5141167	122.3050500	0.80	original	44.62	16.22	0.11	39.05	1.52	51.52
DAC-WST03-03	047.5141167	122.3050500	0.80	duplicate						49.89
DAC-WST04-01	047.5170167	122.3062167	0.83	original	57.04	11.39	0.00	31.57	0.90	52.82
DAC-WST04-02	047.5163500	122.3061667	0.83	original	48.42	9.38	0.00	42.20	0.93	55.09
DAC-WST04-03-R	047.5154333	122.3054500	0.83	original	36.46	14.34	0.00	49.20	1.39	47.04
DAC-WST05-01-R	047.5187000	122.3065667	0.90	original	67.49	24.80	0.00	7.71	2.84	41.02
DAC-WST05-02-1	047.5178833	122.3065333	0.90	original	63.93	16.99	0.00	19.08	1.74	51.82
DAC-WST06-01	047.5195333	122.3078500	2.30	original	70.87	23.53	0.00	5.60	2.40	43.54

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-WST06-02	047.5191500	122.3069833	2.30	original	71.31	21.04	0.00	7.65	2.15	46.40
DAC-WST07-01-R	047.5231000	122.3086000	0.83	original	72.05	17.51	0.00	10.44	1.73	50.07
DAC-WST07-02	047.5218000	122.3078833	0.83	original	65.74	14.61	0.00	19.65	1.38	53.48
DAC-WST07-03	047.5208167	122.3074333	0.83	original	61.57	15.88	0.00	22.55	1.83	55.74
DAC-WST08-01	047.5265333	122.3099667	0.48	original	63.67	14.98	0.00	21.35	1.51	54.27
DAC-WST08-02	047.5258333	122.3094667	0.48	original	69.83	16.42	0.00	13.75	1.60	53.19
DAC-WST08-03	047.5252167	122.3091500	0.48	original	74.31	21.33	0.00	4.36	2.08	46.47
DAC-WST08-04	047.5247833	122.3090500	0.48	original	73.68	21.09	0.00	5.22	2.33	47.63
DAC-WST09-01	047.5283500	122.3138333	1.50	original	73.77	21.56	0.00	4.67	2.34	46.41
DAC-WST09-02	047.5271333	122.3116167	1.50	original	54.18	17.50	0.00	28.33	1.93	56.87
DAC-WST09-02	047.5271333	122.3116167	1.50	duplicate						56.81
DAC-WST10-01	047.5327333	122.3205000	0.63	original	61.25	18.95	0.09	19.72	1.85	53.50
DAC-WST10-02	047.5323000	122.3198333	0.63	original	64.46	18.06	0.00	17.49	1.59	54.43
DAC-WST10-03-R	047.5318667	122.3191500	0.63	original	57.93	18.79	0.50	22.78	1.64	52.41
DAC-WST10-04	047.5312333	122.3181000	0.63	original	55.77	18.33	0.25	25.65	1.52	52.83
DAC-WST10-05	047.5309833	122.3177333	0.63	original	49.03	15.82	0.00	35.15	1.36	55.78
DAC-WST10-06	047.5302667	122.3163833	0.63	original	63.19	22.40	0.03	14.38	1.93	50.64
DAC-WST10-07	047.5299167	122.3158667	0.63	original	62.78	22.21	0.19	14.82	2.11	49.71
DAC-WST10-08	047.5292667	122.3147333	0.63	original	45.36	14.60	0.12	39.92	1.46	56.25
DAC-WST11-01-R2	047.5340167	122.3227000	0.27	original	52.87	14.88	0.00	32.25	1.59	56.15
DAC-WST11-02	047.5338333	122.3226167	0.27	original	17.77	8.14	6.53	67.56	0.95	68.32
DAC-WST11-03-1	047.5334000	122.3214667	0.27	original	53.43	17.99	0.00	28.58	1.93	52.16
DAC-WST11-03-1	047.5334000	122.3214667	0.27	duplicate	54.26	17.70	0.00	28.04	1.94	
DAC-WST12-01	047.5349167	122.3243000	0.40	original	64.69	17.50	1.66	16.15	1.69	52.13
DAC-WST12-02	047.5344500	122.3233333	0.40	original	64.90	15.99	0.07	19.05	1.90	55.90
DAC-WST13-01	047.5370167	122.3276500	0.70	original	70.11	23.89	0.00	6.01	2.43	46.30
DAC-WST13-02-R	047.5361333	122.3261333	0.70	original	64.93	19.76	0.00	15.31	2.10	51.15
DAC-WST13-03	047.5350667	122.3247333	0.70	original	60.87	19.36	0.24	19.53	1.78	52.25
DAC-WST14-01-2	047.5382167	122.3296500	0.55	original	5.59	2.66	0.32	91.43	0.27	74.94
DAC-WST14-01-2	047.5382167	122.3296500	0.55	duplicate	5.56	2.69	0.35	91.41	0.27	
DAC-WST14-02	047.5372667	122.3281833	0.55	original	68.44	22.30	0.00	9.26	2.12	47.98
DAC-WST15-01	047.5405500	122.3331833	1.40	original	66.18	21.69	0.26	11.87	1.89	48.93
DAC-WST15-02	047.5402667	122.3328667	1.40	original	68.38	21.28	0.18	10.15	2.04	49.40
DAC-WST15-03	047.5396667	122.3315000	1.40	original	60.49	19.14	0.00	20.36	1.55	53.42
DAC-WST16-01	047.5436500	122.3369667	0.95	original	68.25	23.51	0.00	8.24	2.19	49.26
DAC-WST16-02-1	047.5424833	122.3357333	0.95	original	9.57	3.62	2.26	84.54	0.35	76.38
DAC-WST17-01	047.5447167	122.3383167	1.45	original	65.28	27.84	0.07	6.81	2.25	48.87
DAC-WST17-02	047.5439833	122.3374000	1.45	original	63.36	26.21	0.00	10.43	2.12	48.45
DAC-WST18-01	047.5545833	122.3430500	2.32	original	62.10	35.66	0.11	2.13	2.13	47.74

Table A-1. Sediment sample locations and sediment characteristics, continued

Field-ID	Latitude (dec. deg.)	Longitude (dec. deg.)	Area Rep (acres)	Replicate	Silt (% dry wt.)	Clay (% dry wt.)	Gravel (% dry wt.)	Sand (% dry wt.)	TOC (% dry wt.)	Pct. Solids
DAC-WST18-02	047.5531167	122.3421167	2.32	original	64.11	34.27	0.00	1.62	2.36	49.10
DAC-WST18-03	047.5508500	122.3409333	2.32	original	65.67	31.91	0.14	2.28	2.24	47.51
DAC-WST18-03	047.5508500	122.3409333	2.32	duplicate						47.95
DAC-WST18-04	047.5472500	122.3393167	2.32	original	70.85	26.75	0.00	2.40	2.32	45.97
DAC-WST18-05	047.5461833	122.3385500	2.32	original	69.26	26.40	0.00	4.34	2.29	47.45
DAC-WST19-01-R	047.5619000	122.3479333	3.58	original	60.83	38.03	0.00	1.14	1.98	48.70
DAC-WST19-02	047.5612500	122.3479000	3.58	original	28.75	24.79	0.24	46.23	1.37	53.79
DAC-WST19-02	047.5612500	122.3479000	3.58	duplicate						53.59
DAC-WST19-02	047.5612500	122.3479000	3.58	triplicate						53.73
DAC-WST19-03	047.5605333	122.3462667	3.58	original	57.16	33.46	0.02	9.36	1.94	48.63
DAC-WST19-04	047.5593667	122.3467000	3.58	original	58.86	39.62	0.00	1.52	1.72	43.00
DAC-WST19-05	047.5582500	122.3453167	3.58	original	59.83	37.83	0.03	2.30	1.80	44.59
DAC-WST19-06	047.5558000	122.3437000	3.58	original	60.14	37.25	0.00	2.61	1.96	50.79
DAC-WST20-01	047.5559333	122.3464000	1.87	original	37.32	16.65	0.70	45.34	1.23	55.40
DAC-WST20-02	047.5558333	122.3457333	1.87	original	20.48	12.33	4.17	63.02	0.67	68.47
DAC-WST20-03	047.5556333	122.3441167	1.87	original	61.58	36.64	0.03	1.75	2.01	50.70
DAC-WST20-03	047.5556333	122.3441167	1.87	duplicate						50.72
DAC-WST21-01	047.5622000	122.3490667	2.97	original	54.07	44.27	0.00	1.66	1.72	49.13
DAC-WST21-02	047.5612500	122.3488833	2.97	original	55.25	42.86	0.05	1.84	2.02	48.05
DAC-WST21-03	047.5608667	122.3495833	2.97	original	58.06	41.05	0.16	0.73	2.55	37.19
DAC-WST22-01	047.5670500	122.3496667	2.85	original	50.79	41.97	0.29	6.95	1.49	48.46
DAC-WST22-02	047.5645500	122.3483667	2.85	original	55.72	40.80	0.04	3.44	2.04	48.89

Table A-2. Total PCBs and PCTs

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-CH01-01	original	3.3E+01		6.9E+00	J-11	2.6E+01	
DAC-CH01-02	original	7.4E+01		1.3E+01		6.1E+01	
DAC-CH01-03	original	4.5E+01		8.4E+00		3.7E+01	
DAC-CH01-04	original	3.8E+01		8.2E+00		3.0E+01	
DAC-CH02-01	original	4.2E+01		1.4E+01		2.8E+01	
DAC-CH02-02-R	original	4.2E+01		9.5E+00		3.3E+01	
DAC-CH02-03	original	5.9E+01		8.4E+00		5.1E+01	
DAC-CH02-03	duplicate	6.2E+01		1.1E+01		5.1E+01	
DAC-CH03-01	original	8.8E+01		8.7E+00		7.9E+01	
DAC-CH03-02	original	2.1E+01		6.7E+00	J-11	1.4E+01	
DAC-CH03-03	original	3.4E+01		5.9E+00	J-11	2.8E+01	
DAC-CH03-04	original	3.0E+01		5.3E+00	J-11	2.5E+01	
DAC-CH04-01	original	1.3E+02		1.5E+01		1.2E+02	
DAC-CH04-02	original	4.1E+03		4.6E+01		4.1E+03	
DAC-CH04-02	duplicate						
DAC-CH04-03	original	1.1E+03		3.5E+01		1.1E+03	
DAC-CH04-04-R	original	2.7E+01		5.5E+00	J-11	2.2E+01	
DAC-CH05-01	original	2.2E+02		4.8E+00	J-11	2.2E+02	
DAC-CH05-02	original	4.5E+02		1.8E+01		4.3E+02	
DAC-CH06-01	original	8.3E+01		1.1E+01		7.2E+01	
DAC-CH06-02	original	2.4E+02		1.3E+02		1.1E+02	
DAC-CH06-03	original	9.2E+01		1.5E+01		7.7E+01	
DAC-CH07-01	original	1.3E+03		7.2E+01		1.2E+03	
DAC-CH07-02	original	4.6E+01		8.4E+00		3.8E+01	
DAC-CH07-02	duplicate	4.7E+01		8.3E+00		3.9E+01	
DAC-CH07-02	triplicate	5.2E+01		9.7E+00		4.2E+01	
DAC-CH07-03	original	9.3E+01		5.5E+01		3.8E+01	
DAC-CH08-01	original	1.6E+02		2.8E+01		1.3E+02	
DAC-CH08-02	original	1.3E+02		1.5E+01		1.2E+02	
DAC-CH09-01	original	9.7E+01		1.4E+01		8.3E+01	
DAC-CH09-02	original	1.3E+02		2.1E+01		1.1E+02	
DAC-CH09-03	original	1.4E+02		1.7E+01		1.2E+02	
DAC-CH10-01	original	1.2E+02		2.0E+01		1.0E+02	
DAC-CH10-02	original	5.9E+01		8.0E+00	J-11	5.1E+01	
DAC-CH11-01	original	1.0E+02		1.8E+01		8.2E+01	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-CH11-02	original	2.5E+02		4.2E+01		2.1E+02	
DAC-CH11-03	original	1.0E+02		1.7E+01		8.3E+01	
DAC-CH12-01-2	original	1.5E+03		1.0E+02		1.4E+03	
DAC-CH12-02	original	1.6E+02		2.6E+01		1.3E+02	
DAC-CH13-01	original	1.0E+02		2.2E+01		7.8E+01	
DAC-CH13-02	original	1.2E+02		1.5E+01		1.1E+02	
DAC-CH13-02	duplicate						
DAC-CH13-03	original	1.3E+02		2.4E+01		1.1E+02	
DAC-EIT01-01	original	3.2E+00		2.8E+00	U	3.2E+00	
DAC-EIT01-02	original	5.5E+00		2.6E+00	U	5.5E+00	
DAC-EIT02-01	original	6.1E+01		1.4E+01		4.7E+01	
DAC-EIT02-02	original	1.3E+01		7.4E+00	J-11	5.6E+00	
DAC-EIT02-04	original	1.8E+02		3.7E+01		1.4E+02	
DAC-EIT03-01	original	1.7E+01		7.7E+00	J-11	9.3E+00	
DAC-EIT03-01	duplicate						
DAC-EIT03-02	original	1.4E+01		2.9E+00	U	1.4E+01	
DAC-EIT03-03	original	6.8E+01		1.5E+01		5.3E+01	
DAC-EIT03-04	original	NR		2.7E+02		NR	
DAC-EIT04-01	original	3.1E+01		6.9E+00	J-11	2.4E+01	
DAC-EIT04-02	original	5.8E+01		1.7E+01		4.1E+01	
DAC-EIT04-03	original	6.5E+01		3.7E+00	U	6.5E+01	
DAC-EIT05-01	original	1.6E+02		4.4E+01		1.2E+02	
DAC-EIT05-01	duplicate	1.9E+02		3.7E+01		1.5E+02	
DAC-EIT05-02	original	2.5E+01		9.8E+00		1.5E+01	
DAC-EIT06-01	original	2.0E+02		3.1E+01		1.7E+02	
DAC-EIT06-02	original	3.0E+03		6.2E+02		2.4E+03	
DAC-EIT06-03	original	1.6E+02		6.2E+01		9.8E+01	
DAC-EIT07-01	original	2.4E+03		1.0E+02		2.3E+03	
DAC-EIT07-02-1	original	1.8E+03		2.8E+01		1.8E+03	
DAC-EIT07-02-1	duplicate						
DAC-EIT07-03	original	6.1E+02		1.5E+01		6.0E+02	
DAC-EIT07-04	original	1.5E+02		1.7E+01		1.3E+02	
DAC-EIT07-05-2	original	1.1E+02		2.8E+01		8.2E+01	
DAC-EIT08-01-R	original	3.4E+03		6.6E+01		3.3E+03	
DAC-EIT08-02	original	2.6E+04		5.5E+02		2.5E+04	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-EIT08-02	duplicate						
DAC-EIT08-03	original	1.3E+03		7.6E+01		1.2E+03	
DAC-EIT08-03	duplicate	1.4E+03		4.7E+01		1.4E+03	
DAC-EIT09-01	original	4.8E+02		3.1E+01		4.5E+02	
DAC-EIT09-02	original	1.3E+02		9.1E+00		1.2E+02	
DAC-EIT09-03	original	NR		6.5E+03		NR	
DAC-EIT09-03	duplicate	NR		4.7E+03		NR	
DAC-EIT09-04	original	1.1E+02		7.8E+00	J-11	1.0E+02	
DAC-EIT10-01	original	2.9E+02		4.6E+01		2.4E+02	
DAC-EIT10-01	duplicate						
DAC-EIT10-02	original	6.5E+01		2.0E+01		4.5E+01	
DAC-EIT11-01-2	original	3.1E+01		6.0E+00	U	3.1E+01	
DAC-EIT11-02	original	1.4E+02		9.1E+01		4.9E+01	
DAC-EIT11-03	original	4.7E+00		8.1E+00	U	4.7E+00	
DAC-EIT12-01	original	2.5E+01		2.1E+01		4.0E+00	
DAC-EIT12-02-5	original	2.1E+01		6.7E+00	J-11	1.4E+01	
DAC-EIT13-01	original	5.6E+00		5.0E+00	U	5.6E+00	
DAC-EIT13-02	original	8.4E+00		3.9E+00	U	8.4E+00	
DAC-EIT13-03	original	3.1E+00		6.3E+00	U	3.1E+00	
DAC-EIT13-03	duplicate	6.2E+00		6.4E+00	U	6.2E+00	
DAC-EIT13-03	triplicate	4.0E+00		5.4E+00	U	4.0E+00	
DAC-EIT14-01	original	3.9E+01		1.1E+01		2.8E+01	
DAC-EIT14-01	duplicate						
DAC-EIT14-02	original	2.2E+00		2.4E+00	U	2.2E+00	
DAC-EITUPRVR01	original	7.9E+00		3.4E+00	U	7.9E+00	
DAC-EITUPRVR02	original	6.8E+00		4.1E+00	J-11	2.7E+00	
DAC-EST01-01	original	2.3E+00		1.8E+00	U	2.3E+00	
DAC-EST01-02	original	1.6E+00		1.7E+00	U	1.6E+00	
DAC-EST01-02	duplicate						
DAC-EST01-03	original	7.7E+00		1.7E+00	U	7.7E+00	
DAC-EST01-04	original	6.0E-01	U	2.7E+00	U	6.0E-01	U
DAC-EST02-02	original	3.1E+00		1.6E+00	U	3.1E+00	
DAC-EST02-03	original	4.1E+00		2.1E+00	U	4.1E+00	
DAC-EST03-01-R	original	1.1E+01		2.7E+00	J-11	8.3E+00	
DAC-EST03-02-1	original	2.6E+00		2.1E+00	U	2.6E+00	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-EST03-03-R	original	5.6E-01	U	1.7E+00	U	5.6E-01	U
DAC-EST03-04	original	5.6E+00		3.1E+00	U	5.6E+00	
DAC-EST03-04	duplicate	6.1E+00		2.9E+00	U	6.1E+00	
DAC-EST03-05-R	original	8.9E+01		1.8E+00	J-11	8.7E+01	
DAC-EST04-01	original	1.9E+01		3.4E+00	U	1.9E+01	
DAC-EST04-02	original	1.5E+01		3.1E+00	U	1.5E+01	
DAC-EST04-03	original	6.0E+00		2.8E+00	U	6.0E+00	
DAC-EST04-04	original	5.7E+00		3.1E+00	U	5.7E+00	
DAC-EST04-05-R	original	2.3E+00		4.1E+00	U	2.3E+00	
DAC-EST05-01	original	1.9E+01		9.5E+00		9.5E+00	
DAC-EST05-02-R	original	1.6E+01		6.4E+00	J-11	9.6E+00	
DAC-EST06-01	original	1.3E+01		8.6E+00		4.4E+00	
DAC-EST06-01	duplicate	1.6E+01		8.1E+00	U	1.6E+01	
DAC-EST06-02	original	1.7E+01		5.6E+00	J-11	1.1E+01	
DAC-EST06-03	original	8.7E+00		4.6E+00	J-11	4.1E+00	
DAC-EST06-04	original	1.3E+01		9.3E+00		3.7E+00	
DAC-EST06-05-R	original	1.3E+01		1.0E+01		3.0E+00	
DAC-EST06-06	original	4.7E+01		7.2E+00	J-11	4.0E+01	
DAC-EST06-07	original	1.8E+01		4.9E+00	J-11	1.3E+01	
DAC-EST06-07	duplicate	2.0E+01		5.1E+00	J-11	1.5E+01	
DAC-EST06-08	original	1.6E+01		5.1E+00	J-11	1.1E+01	
DAC-EST06-08	duplicate						
DAC-EST07-01	original	1.0E+02		2.5E+01		7.5E+01	
DAC-EST07-02	original	8.5E+01		2.0E+01		6.5E+01	
DAC-EST07-03	original	1.1E+02		2.6E+01		8.4E+01	
DAC-EST07-04	original	7.6E+01		1.2E+01		6.4E+01	
DAC-EST07-05	original	4.8E+01		1.1E+01		3.7E+01	
DAC-EST07-06	original	6.3E+01		1.4E+01		4.9E+01	
DAC-EST07-07-R	original	1.6E+01		5.6E+00	J-11	1.0E+01	
DAC-EST07-08	original	1.6E+01		4.7E+00	J-11	1.1E+01	
DAC-EST08-01	original	2.9E+01		6.6E+00	J-11	2.2E+01	
DAC-EST08-02	original	1.1E+01		1.7E+01		7.9E-01	U
DAC-EST08-02	duplicate						
DAC-EST08-03	original	6.6E+01		7.3E+00	J-11	5.9E+01	
DAC-EST09-01	original	1.3E+02		1.9E+01		1.1E+02	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-EST09-02	original	9.7E+01		1.0E+01		8.7E+01	
DAC-EST09-03	original	4.4E+02		5.3E+01		3.9E+02	
DAC-EST09-04	original	2.5E+03		9.6E+02		1.5E+03	
DAC-EST09-05	original	1.9E+02		1.7E+01		1.7E+02	
DAC-EST09-06	original	4.4E+01		9.2E+00		3.5E+01	
DAC-EST10-01	original	1.4E+03		7.1E+02		6.9E+02	
DAC-EST10-02-R	original	7.4E+02		7.3E+01		6.7E+02	
DAC-EST11-01-R	original	1.7E+03		2.5E+01		1.7E+03	
DAC-EST11-02	original	1.1E+02		2.0E+01		9.0E+01	
DAC-EST11-02	duplicate						
DAC-EST11-03	original	3.1E+02		1.9E+01		2.9E+02	
DAC-EST11-03	duplicate	3.1E+02		1.8E+01		2.9E+02	
DAC-EST11-04	original	1.6E+02		1.4E+01		1.5E+02	
DAC-EST11-05	original	3.5E+02		1.9E+01		3.3E+02	
DAC-EST11-06	original	2.5E+02		2.6E+01		2.2E+02	
DAC-EST11-07	original	4.9E+01		7.8E+00	J-11	4.1E+01	
DAC-EST11-08	original	8.6E+01		1.2E+01		7.4E+01	
DAC-EST11-09	original	1.1E+02		3.2E+01		7.8E+01	
DAC-EST11-10	original	4.5E+01		1.3E+01		3.2E+01	
DAC-EST11-11-R	original	1.9E+02		3.3E+01		1.6E+02	
DAC-EST11-12	original	2.5E+02		2.3E+01		2.3E+02	
DAC-EST12-01	original	7.1E+03		1.3E+02		7.0E+03	
DAC-EST12-02	original	4.2E+03		1.1E+02		4.1E+03	
DAC-EST12-03	original	1.4E+03		4.3E+01		1.4E+03	
DAC-EST12-03	duplicate	1.4E+03		4.9E+01		1.4E+03	
DAC-EST12-03	triplicate	1.5E+03		5.2E+01		1.4E+03	
DAC-EST12-04	original	1.1E+03		4.2E+01		1.1E+03	
DAC-EST12-05	original	6.8E+03		1.6E+02		6.6E+03	
DAC-EST12-06	original	7.8E+02		4.1E+01		7.4E+02	
DAC-EST12-07-1	original	2.0E+02		1.3E+01		1.9E+02	
DAC-EST12-08-1	original	3.4E+02		4.0E+01		3.0E+02	
DAC-EST12-09	original	2.2E+02		1.6E+01		2.0E+02	
DAC-EST12-09	duplicate						
DAC-EST12-10	original	3.6E+02		9.7E+00		3.5E+02	
DAC-EST13-01	original	1.4E+02		1.7E+01		1.2E+02	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-EST13-02	original	2.2E+02		2.1E+01		2.0E+02	
DAC-EST13-03	original	2.1E+02		1.5E+01		2.0E+02	
DAC-EST13-04	original	2.8E+02		4.5E+01		2.4E+02	
DAC-EST13-05	original	2.8E+02		5.2E+01		2.3E+02	
DAC-EST13-06	original	1.3E+02		2.2E+01		1.1E+02	
DAC-EST14-01-R	original	2.7E+02		1.6E+01		2.5E+02	
DAC-EST14-02	original	1.3E+02		1.1E+01		1.2E+02	
DAC-EST14-03-1	original	1.5E+02		1.3E+01		1.4E+02	
DAC-EST14-04	original	1.6E+02		4.6E+01		1.1E+02	
DAC-EST14-05	original	2.0E+02		2.4E+01		1.8E+02	
DAC-EST15-01	original	1.5E+02		1.5E+01		1.4E+02	
DAC-EST15-02	original	1.8E+02		1.4E+01		1.7E+02	
DAC-EST15-03	original	1.6E+02		1.7E+01		1.4E+02	
DAC-EST16-01	original	1.5E+02		1.3E+01		1.4E+02	
DAC-EST16-02	original	1.4E+02		1.6E+01		1.2E+02	
DAC-EST16-03	original	1.9E+02		1.9E+01		1.7E+02	
DAC-EST16-04	original	2.2E+02		2.5E+01		2.0E+02	
DAC-EST16-05	original	2.1E+02		2.2E+01		1.9E+02	
DAC-EST17-01	original	3.2E+02		1.8E+01		3.0E+02	
DAC-EST17-02-2	original	2.7E+02		5.2E+01		2.2E+02	
DAC-EST18-01	original	1.5E+02		1.9E+01		1.3E+02	
DAC-EST18-02-R	original	1.2E+02		1.8E+01		1.0E+02	
DAC-EST18-03	original	1.6E+02		2.2E+01		1.4E+02	
DAC-EST18-04	original	2.0E+02		2.1E+01		1.8E+02	
DAC-EST18-04	duplicate						
DAC-EST19-01	original	1.2E+02		1.6E+01		1.0E+02	
DAC-EST19-02	original	1.0E+02		1.7E+01		8.3E+01	
DAC-EST19-03-1	original	1.3E+02		1.8E+01		1.1E+02	
DAC-EST19-03-1	duplicate	1.6E+02		4.1E+01		1.2E+02	
DAC-EST19-04	original	1.3E+02		1.4E+01		1.2E+02	
DAC-EST19-04	duplicate						
DAC-EST19-05	original	1.1E+02		1.7E+01		9.3E+01	
DAC-EST19-06	original	1.1E+02		2.0E+01		9.0E+01	
DAC-EST19-06	duplicate	1.0E+02		1.5E+01		8.5E+01	
DAC-EST20-01	original	1.3E+02		1.9E+01		1.1E+02	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-EST20-02	original	1.2E+02		2.0E+01		1.0E+02	
DAC-EST20-03	original	1.2E+02		1.5E+01		1.1E+02	
DAC-EST20-04	original	7.3E+02		3.1E+01		7.0E+02	
DAC-EST20-05	original	1.2E+02		1.3E+01		1.1E+02	
DAC-EST20-06	original	3.4E+02		4.2E+01		3.0E+02	
DAC-EST21-01	original	1.6E+02		2.9E+01		1.3E+02	
DAC-EST21-02	original	1.1E+02		1.9E+01		9.1E+01	
DAC-EST21-03	original	4.4E+03		1.9E+01		4.4E+03	
DAC-EST21-04	original	1.9E+02		2.8E+01		1.6E+02	
DAC-EST22-01	original	2.2E+02		2.9E+01		1.9E+02	
DAC-EST22-02	original	2.8E+02		3.2E+01		2.5E+02	
DAC-EST22-03	original	1.5E+02		2.2E+01		1.3E+02	
DAC-EST22-04	original	1.9E+02		2.6E+01		1.6E+02	
DAC-EST22-04	duplicate	2.1E+02		3.0E+01		1.8E+02	
DAC-EST22-04	triplicate	2.1E+02		2.6E+01		1.8E+02	
DAC-EST23-01	original	1.6E+01		6.0E+00	J-11	1.0E+01	
DAC-EST23-02	original	1.3E+02		1.9E+01		1.1E+02	
DAC-EST23-03	original	1.5E+02		2.3E+01		1.3E+02	
DAC-EST23-04	original	1.5E+02		2.3E+01		1.3E+02	
DAC-EST23-05	original	2.3E+02		2.8E+01		2.0E+02	
DAC-EST23-06	original	1.6E+02		2.5E+01		1.4E+02	
DAC-ESTUPRVR01	original	6.3E-01 U		3.0E+00 U		6.3E-01 U	
DAC-WEST01	original	2.2E+03		2.0E+02		2.0E+03	
DAC-WEST02	original	1.8E+03		7.0E+01		1.7E+03	
DAC-WEST03	original	6.7E+03		5.3E+02		6.2E+03	
DAC-WEST04	original	5.4E+03		7.7E+02		4.6E+03	
DAC-WEST05	original	1.7E+03		5.6E+01		1.6E+03	
DAC-WEST06	original	1.3E+02		1.3E+01		1.2E+02	
DAC-WEST07	original	4.6E+02		5.1E+01		4.1E+02	
DAC-WEST08	original	6.5E+01		5.1E+00 J-11		6.0E+01	
DAC-WIT01-01	original	8.9E+00		5.3E+00 J-11		3.6E+00	
DAC-WIT01-02	original	5.5E+01		9.0E+00		4.6E+01	
DAC-WIT01-03	original	1.1E+01		4.3E+00 U		1.1E+01	
DAC-WIT01-04	original	1.1E+02		1.4E+01		9.6E+01	
DAC-WIT01-05	original	7.3E+00		3.9E+00 J-11		3.4E+00	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-WIT02-01	original	3.5E+01		2.8E+01		7.0E+00	
DAC-WIT02-02	original	3.0E+01		1.1E+01		1.9E+01	
DAC-WIT03-01	original	4.2E+01		8.1E+00	J-11	3.4E+01	
DAC-WIT03-02	original	2.0E+01		3.9E+00	J-11	1.6E+01	
DAC-WIT03-03	original	1.3E+01		4.3E+00	J-11	8.7E+00	
DAC-WIT03-04	original	7.5E+01		3.2E+01		4.3E+01	
DAC-WIT03-04	duplicate	8.0E+01		3.7E+01		4.3E+01	
DAC-WIT03-05	original	9.1E+00		3.0E+00	J-11	6.1E+00	
DAC-WIT03-06	original	3.1E+01		6.3E+00	J-11	2.5E+01	
DAC-WIT04-01	original	1.9E+01		5.7E+00	J-11	1.3E+01	
DAC-WIT04-02	original	4.6E+01		2.9E+00	U	4.6E+01	
DAC-WIT05-01	original	3.6E+02		1.8E+01		3.4E+02	
DAC-WIT05-02	original	5.3E+01		2.2E+00	J-11	5.1E+01	
DAC-WIT05-03	original	1.9E+01		2.6E+00	J-11	1.6E+01	
DAC-WIT05-04	original	1.1E+01		2.9E+00	U	1.1E+01	
DAC-WIT06-01	original	2.0E+01		2.8E+00	J-11	1.7E+01	
DAC-WIT06-02	original	3.7E+01		5.0E+00	J-11	3.2E+01	
DAC-WIT06-03	original	4.9E+01		4.5E+00	U	4.9E+01	
DAC-WIT07-01	original	2.4E+03		5.6E+00	J-11	2.4E+03	
DAC-WIT07-01	duplicate	2.8E+03		5.5E+00	J-11	2.8E+03	
DAC-WIT07-02	original	5.6E+02		6.2E+00	J-11	5.5E+02	
DAC-WIT07-03	original	7.1E+00		2.6E+00	U	7.1E+00	
DAC-WIT08-01	original	4.4E+01		7.1E+00	J-11	3.7E+01	
DAC-WIT08-02	original	1.2E+02		1.8E+01		1.0E+02	
DAC-WIT08-03	original	2.4E+01		3.0E+00	U	2.4E+01	
DAC-WIT08-04	original	6.6E+01		8.8E+00		5.7E+01	
DAC-WIT08-05	original	1.0E+02		3.0E+01		7.0E+01	
DAC-WIT08-06	original	7.2E+01		7.6E+00	J-11	6.4E+01	
DAC-WIT09-01-R5	original	2.2E+02		2.1E+01		2.0E+02	
DAC-WIT09-02	original	1.3E+02		1.0E+01		1.2E+02	
DAC-WIT10-01	original	6.1E+01		1.0E+01		5.1E+01	
DAC-WIT10-01	duplicate	6.1E+01		8.3E+00		5.3E+01	
DAC-WIT10-02	original	8.6E+01		2.8E+01		5.8E+01	
DAC-WIT11-01	original	5.3E+03		1.5E+02		5.2E+03	
DAC-WIT11-02	original	1.1E+01		2.0E+00	U	1.1E+01	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-WIT12-01-R	original	8.1E+02		4.3E+01		7.7E+02	
DAC-WIT12-02	original	3.7E+02		4.1E+01		3.3E+02	
DAC-WIT12-02	duplicate	3.5E+02		3.1E+01		3.2E+02	
DAC-WIT12-02	triplicate	3.5E+02		2.8E+01		3.2E+02	
DAC-WIT12-03	original	6.9E+02		3.5E+01		6.6E+02	
DAC-WIT12-04	original	2.3E+02		1.7E+01		2.1E+02	
DAC-WIT12-05	original	3.7E+02		3.2E+01		3.4E+02	
DAC-WIT12-06	original	1.1E+01		3.4E+00 J-11		7.6E+00	
DAC-WIT12-07	original	1.3E+03		7.6E+02		5.4E+02	
DAC-WIT12-08	original	2.6E+02		2.7E+01		2.3E+02	
DAC-WIT13-01	original	4.2E+01		5.2E+00 J-11		3.7E+01	
DAC-WIT13-02	original	1.1E+01		3.8E+00 U		1.1E+01	
DAC-WIT13-03	original	6.0E+00		3.3E+00 U		6.0E+00	
DAC-WIT13-04	original	9.1E+00		2.0E+00 U		9.1E+00	
DAC-WIT13-05	original	1.7E+01		5.2E+00 U		1.7E+01	
DAC-WIT13-06	original	7.3E+00		2.1E+00 J-11		5.2E+00	
DAC-WIT14-01	original	3.6E+00		5.5E+00 U		3.6E+00	
DAC-WIT14-02	original	5.2E+00		3.6E+00 U		5.2E+00	
DAC-WST01-01	original	2.1E+01		4.2E+00 J-11		1.7E+01	
DAC-WST01-02	original	4.0E+01		7.9E+00 J-11		3.2E+01	
DAC-WST02-01	original	1.1E+01		2.5E+00 U		1.1E+01	
DAC-WST02-02	original	6.7E+01		7.5E+00 J-11		6.0E+01	
DAC-WST03-01	original	3.0E+01		3.9E+00 J-11		2.6E+01	
DAC-WST03-02	original	2.4E+01		3.1E+00 J-11		2.1E+01	
DAC-WST03-03	original	4.5E+01		6.5E+00 J-11		3.9E+01	
DAC-WST03-03	duplicate	4.1E+01		5.9E+00 J-11		3.5E+01	
DAC-WST04-01	original	3.1E+01		7.9E+00 J-11		2.3E+01	
DAC-WST04-02	original	1.6E+01		2.6E+00 U		1.6E+01	
DAC-WST04-03-R	original	3.4E+01		5.5E+00 J-11		2.9E+01	
DAC-WST05-01-R	original	5.7E+01		7.2E+00 J-11		5.0E+01	
DAC-WST05-02-1	original	2.7E+01		5.8E+00 J-11		2.1E+01	
DAC-WST06-01	original	6.2E+01		1.0E+01		5.2E+01	
DAC-WST06-02	original	6.5E+01		1.1E+01		5.4E+01	
DAC-WST07-01-R	original	7.0E+01		1.0E+01		6.0E+01	
DAC-WST07-02	original	4.0E+01		3.2E+00 U		4.0E+01	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-WST07-03	original	3.1E+01		6.4E+00	J-11	2.5E+01	
DAC-WST08-01	original	3.6E+01		5.9E+00	J-11	3.0E+01	
DAC-WST08-02	original	4.6E+01		8.2E+00		3.8E+01	
DAC-WST08-03	original	8.0E+01		1.3E+01		6.7E+01	
DAC-WST08-04	original	1.1E+02		1.1E+01		9.9E+01	
DAC-WST09-01	original	8.6E+01		6.5E+00	J-11	8.0E+01	
DAC-WST09-02	original	7.8E+03		1.6E+02		7.6E+03	
DAC-WST09-02	duplicate	8.3E+03		2.4E+02		8.1E+03	
DAC-WST10-01	original	1.2E+02		1.3E+01		1.1E+02	
DAC-WST10-02	original	1.1E+02		1.2E+01		9.8E+01	
DAC-WST10-03-R	original	1.4E+02		1.8E+01		1.2E+02	
DAC-WST10-04	original	1.6E+02		5.2E+01		1.1E+02	
DAC-WST10-05	original	9.9E+01		1.5E+01		8.4E+01	
DAC-WST10-06	original	1.8E+02		1.7E+01		1.6E+02	
DAC-WST10-07	original	1.8E+02		2.1E+01		1.6E+02	
DAC-WST10-08	original	1.2E+02		1.1E+01		1.1E+02	
DAC-WST11-01-R2	original	6.7E+01		7.2E+00	J-11	6.0E+01	
DAC-WST11-02	original	1.3E+02		1.5E+01		1.2E+02	
DAC-WST11-03-1	original	1.0E+02		1.7E+01		8.3E+01	
DAC-WST11-03-1	duplicate						
DAC-WST12-01	original	6.9E+01		6.3E+00	J-11	6.3E+01	
DAC-WST12-02	original	4.1E+01		6.1E+00	J-11	3.5E+01	
DAC-WST13-01	original	1.6E+02		1.1E+01		1.5E+02	
DAC-WST13-02-R	original	1.2E+02		3.7E+01		8.3E+01	
DAC-WST13-03	original	1.3E+02		2.7E+01		1.0E+02	
DAC-WST14-01-2	original	4.3E+01		4.9E+00	J-11	3.8E+01	
DAC-WST14-01-2	duplicate						
DAC-WST14-02	original	1.1E+02		8.6E+00		1.0E+02	
DAC-WST15-01	original	1.2E+02		1.0E+01		1.1E+02	
DAC-WST15-02	original	1.2E+02		1.5E+01		1.1E+02	
DAC-WST15-03	original	1.7E+02		3.2E+01		1.4E+02	
DAC-WST16-01	original	1.2E+02		1.0E+01		1.1E+02	
DAC-WST16-02-1	original	6.1E+01		5.1E+00	J-11	5.6E+01	
DAC-WST17-01	original	1.5E+02		1.4E+01		1.4E+02	
DAC-WST17-02	original	2.9E+02		3.0E+01		2.6E+02	

Table A-2. Total PCBs and PCTs, continued

Field-ID	Replicate	PCBs + PCTs (ng/g dry wt.)	Qualifier (PCBs + PCTs)	Total PCTs (ng/g dry wt.)	Qualifier (Total PCTs)	Total PCBs (calc.) (ng/g dry wt.)	Qualifier (Total PCBs)
DAC-WST18-01	original	7.8E+01		1.3E+01		6.5E+01	
DAC-WST18-02	original	8.4E+01		1.2E+01		7.2E+01	
DAC-WST18-03	original	1.0E+02		1.2E+01		8.8E+01	
DAC-WST18-03	duplicate	9.0E+01		2.3E+01		6.7E+01	
DAC-WST18-04	original	1.3E+02		1.5E+01		1.2E+02	
DAC-WST18-05	original	1.5E+02		1.4E+01		1.4E+02	
DAC-WST19-01-R	original	1.4E+02		2.0E+01		1.2E+02	
DAC-WST19-02	original	1.1E+02		1.6E+01		9.4E+01	
DAC-WST19-02	duplicate	1.2E+02		1.9E+01		1.0E+02	
DAC-WST19-02	triplicate	1.1E+02		1.5E+01		9.5E+01	
DAC-WST19-03	original	2.3E+02		3.9E+01		1.9E+02	
DAC-WST19-04	original	8.0E+01		1.6E+01		6.4E+01	
DAC-WST19-05	original	1.0E+02		1.2E+01		8.8E+01	
DAC-WST19-06	original	9.0E+01		1.2E+01		7.8E+01	
DAC-WST20-01	original	8.7E+01		1.5E+01		7.2E+01	
DAC-WST20-02	original	3.4E+01		5.1E+00	J-11	2.9E+01	
DAC-WST20-03	original	8.5E+01		1.2E+01		7.3E+01	
DAC-WST20-03	duplicate	1.2E+02		1.6E+01		1.0E+02	
DAC-WST21-01	original	3.1E+02		1.3E+01		3.0E+02	
DAC-WST21-02	original	1.6E+02		1.5E+01		1.5E+02	
DAC-WST21-03	original	1.4E+02		2.1E+01		1.2E+02	
DAC-WST22-01	original	8.7E+01		1.3E+01		7.4E+01	
DAC-WST22-02	original	1.5E+02		1.9E+01		1.3E+02	

Table A-3. Results of analysis from sediments collected in the East Intertidal region

Analyte	01-01		01-02		02-01		02-02		02-04		03-01		03-02		03-03	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	1.6E-01	U	4.6E-01	J-10	2.6E+00	U-7	2.6E+00	U-7	2.8E+01	J-10	2.6E+00	J-10	2.8E+00	J-10	1.1E+01	J-10
PCB105	1.7E-01	U	1.7E-01	U	NR		2.2E-01	U	NR		2.1E-01	U	2.0E-01	U	2.0E+00	
PCB110	1.7E-01	U	1.7E-01	U	1.4E+00	U-7	1.2E+00	U-7	1.4E+01		1.3E+00		8.9E-01		4.0E+00	
PCB118	1.6E-01	U	4.5E-01	J-11	1.9E+00	U-7	2.2E-01	U	1.1E+01		1.9E+00	U-7	2.0E+00	U-7	4.7E+00	
PCB126	1.9E-01	U	1.9E-01	U	2.8E-01	U	2.4E-01	U	2.2E-01	U	2.3E-01	U	2.1E-01	U	2.9E-01	U
PCB128	1.9E-01	U	1.9E-01	U	1.4E+00	J-10	2.4E-01	U	6.9E+00	J-10	2.1E-01	U	2.0E-01	U	2.8E-01	U
PCB138	1.8E-01	U	1.8E-01	U	1.1E+00		7.9E-01		1.1E+01		1.0E+00		9.9E-01		3.2E+00	
PCB153	1.7E-01	U	4.8E-01	J-10	2.1E+00	J-10	2.0E+00	J-10	2.0E+01	J-10	1.9E+00	J-10	2.3E+00	J-10	7.8E+00	J-10
PCB156	1.7E-01	U	1.7E-01	U	1.1E+00		2.2E-01	U	1.5E+00		1.9E-01	U	1.8E-01	U	2.5E-01	U
PCB157	1.5E-01	U	1.5E-01	U	2.2E-01	U	1.9E-01	U	9.3E-01		1.7E-01	U	1.6E-01	U	2.2E-01	U
PCB169	4.7E-01	U	4.7E-01	U	7.0E-01	U	6.0E-01	U	5.5E-01	U	5.5E-01	U	5.2E-01	U	7.2E-01	U
PCB170	1.7E-01	U	1.7E-01	U	2.5E-01	U	2.2E-01	U	3.5E+00		2.0E-01	U	1.9E-01	U	1.8E+00	
PCB180	1.5E-01	U	1.5E-01	U	1.6E+00	U-7	7.6E-01	U-7	5.1E+00		1.8E-01	U	1.7E-01	U	3.2E+00	
PCB189	2.1E-01	U	2.1E-01	U	3.2E-01	U	2.8E-01	U	2.5E-01	U	2.4E-01	U	2.3E-01	U	3.2E-01	U
PCB77	2.1E-01	U	2.1E-01	U	3.2E-01	U	2.7E-01	U	2.5E-01	U	2.4E-01	U	2.3E-01	U	3.2E-01	U
Total PCBs (calc)	3.2E+00		5.5E+00		4.7E+01		5.6E+00		1.4E+02		9.3E+00		1.4E+01		5.3E+01	
Total PCTs	2.8E+00	U	2.6E+00	U	1.4E+01		7.4E+00	J-11	3.7E+01		7.7E+00	J-11	2.9E+00	U	1.5E+01	
Analyte	03-04		04-01		04-02		04-03		05-01		05-01D		05-02		06-01	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	NR		8.9E+00	J-10	1.4E+01	J-10	7.6E+00	J-10	2.9E+01	J-10	3.3E+01	J-10	4.6E+00	J-10	2.5E+01	J-10
PCB105	NR		8.4E-01		1.0E+00		3.9E+00		7.6E+00		6.3E+00		4.1E-01	J-10,11	5.5E-01	U
PCB110	NR		3.3E+00		4.8E+00		9.4E-01		1.3E+01		1.7E+01		1.4E+00		5.5E-01	U
PCB118	NR		2.7E+00	U-7	4.8E+00	U-7	4.7E+00	U-7	1.1E+01		1.4E+01		1.5E-01	U	5.6E+00	
PCB126	NR		1.8E-01	U	3.1E-01	U	2.2E-01	U	3.8E-01	U	4.4E-01	U	1.7E-01	U	6.1E-01	U
PCB128	NR		1.8E+00	J-10	2.3E+00	J-10	9.1E+00	J-10	8.0E+00	J-10	8.5E+00	J-10	5.7E+00	J-10	5.9E-01	U
PCB138	NR		2.4E+00		3.3E+00		1.9E+01		1.0E+01		1.2E+01		9.8E-01		7.3E+00	
PCB153	NR		5.1E+00	J-10	9.1E+00	J-10	5.6E+00	J-10	2.2E+01	J-10	2.9E+01	J-10	3.0E+00	J-10	1.5E+01	J-10
PCB156	NR		1.5E-01	U	2.6E-01	U	1.9E-01	U	3.4E-01	U	3.9E-01	U	1.5E-01	U	5.3E-01	U
PCB157	NR		1.4E-01	U	2.3E-01	U	1.7E-01	U	3.0E-01	U	3.5E-01	U	1.4E-01	U	NR	
PCB169	NR		4.2E-01	U	7.2E-01	U	5.1E-01	U	9.4E-01	U	1.1E+00	U	4.3E-01	U	1.5E+00	U
PCB170	NR		5.5E-01	J-11	1.1E+00		6.1E-01		4.2E+00		5.2E+00		1.5E-01	U	5.3E-01	U
PCB180	NR		1.4E+00		2.8E+00		9.4E-01		6.4E+00		8.2E+00		1.4E-01	U	5.5E+00	
PCB189	NR		1.9E-01	U	3.3E-01	U	2.3E-01	U	4.3E-01	U	4.9E-01	U	2.0E-01	U	6.8E-01	U
PCB77	NR		2.1E-01	U	3.5E-01	U	2.5E-01	U	4.2E-01	U	4.9E-01	U	1.9E-01	U	6.7E-01	U
Total PCBs (calc)	NR		2.4E+01		4.1E+01		6.5E+01		1.2E+02		1.5E+02		1.5E+01		1.7E+02	
Total PCTs	2.7E+02		6.9E+00	J-11	1.7E+01		3.7E+00	U	4.4E+01		3.7E+01		9.8E+00		3.1E+01	

Table A-3. Results of analysis from sediments collected in the East Intertidal region, continued

Analyte	06-02		06-03		07-01		07-02-1		07-03		07-04		07-05-2		08-01-R	
	ppb	Q														
PCB101	5.7E+02	J-10	2.9E+01	J-10	5.9E+02	J-10	4.6E+02	J-10	1.6E+02	J-10	3.8E+01	J-10	2.2E+01	J-10	7.0E+02	J-10
PCB105	1.1E+02		2.0E+01		4.7E+01		3.1E+01		1.3E+01		3.3E+00		2.4E+00		NR	
PCB110	3.4E+02		1.1E+01		2.7E+02		2.0E+02		7.1E+01		1.4E+01		8.5E+00		3.3E+02	
PCB118	2.7E+02		6.7E+00		1.4E+02		9.3E+01		3.9E+01		8.3E+00		5.5E+00	U-7	2.3E+02	
PCB126	5.8E-01	U	7.8E-01	U	2.2E-01	U	3.2E-01	U	1.8E-01	U	1.8E-01	U	1.8E-01	U	1.4E+00	U-7
PCB128	1.4E+02	J-10	7.3E+00	J-10	8.1E+01	J-10	4.6E+01	J-10	1.4E+01	J-10	5.8E+00	J-10	3.4E+00	J-10	9.0E+01	J-10
PCB138	2.4E+02		8.7E+00		1.6E+02		9.4E+01		3.0E+01		7.9E+00		4.4E+00		1.8E+02	
PCB153	3.4E+02	J-10	1.8E+01	J-10	2.8E+02	J-10	2.6E+02	J-10	8.8E+01	J-10	2.2E+01	J-10	1.3E+01	J-10	4.7E+02	J-10
PCB156	2.8E+01		6.9E-01	U	1.6E+01		9.2E+00		2.9E+00		7.4E-01		1.6E-01	U	2.2E+01	
PCB157	1.8E+01		6.1E-01	U	7.3E+00		3.6E+00		1.4E-01	U	1.4E-01	U	1.4E-01	U	NR	
PCB169	1.4E+00	U	1.9E+00	U	5.5E-01	U	8.1E-01	U	4.4E-01	U	4.5E-01	U	4.5E-01	U	7.6E-01	U
PCB170	8.8E+01		5.1E+00		4.4E+01		1.9E+01		7.3E+00		3.1E+00		2.1E+00		3.9E+01	
PCB180	9.3E+01		6.6E+00		5.5E+01		2.3E+01		9.5E+00	U-7	4.7E+00	U-7	3.4E+00		4.8E+01	
PCB189	6.5E-01	U	8.7E-01	U	1.5E+00		3.6E-01	U	2.0E-01	U	2.0E-01	U	2.0E-01	U	1.9E+00	
PCB77	6.4E-01	U	8.6E-01	U	2.2E+00		1.1E+00		2.0E-01	U	2.0E-01	U	2.0E-01	U	7.3E+00	
Total PCBs (calc)	2.4E+03		9.8E+01		2.3E+03		1.8E+03		6.0E+02		1.3E+02		8.2E+01		3.3E+03	
Total PCTs	6.2E+02		6.2E+01		1.0E+02		2.8E+01		1.5E+01		1.7E+01		2.8E+01		6.6E+01	
Analyte	08-02		08-03		08-03D		09-01		09-02		09-03		09-03D		09-04	
	ppb	Q														
PCB101	5.6E+03	J-10	3.5E+02	J-10	3.6E+02	J-10	1.3E+02	J-10	3.4E+01	J-10	NR		NR		3.7E+01	J-10
PCB105	5.6E+02		2.4E+01		2.8E+01		NR		3.6E+00		NR		NR		2.1E+00	
PCB110	3.0E+03		1.4E+02		1.5E+02		4.5E+01		1.2E+01		NR		NR		1.2E+01	
PCB118	2.2E+03		7.8E+01		7.7E+01		3.3E+01		8.7E+00		NR		NR		4.7E+00	
PCB126	NR		3.2E-01	U	2.0E-01	U	2.1E-01	U	2.0E-01	U	NR		NR		1.8E-01	U
PCB128	6.2E+02	J-10	3.9E+01	J-10	3.4E+01	J-10	1.2E+01	J-10	5.1E+00	U-7	NR		NR		5.7E+00	U-7
PCB138	1.4E+03		7.1E+01		6.9E+01		3.0E+01		8.9E+00		NR		NR		8.5E+00	
PCB153	3.0E+03	J-10	1.6E+02	J-10	1.8E+02	J-10	8.2E+01	J-10	2.3E+01	J-10	NR		NR		1.8E+01	J-10
PCB156	1.6E+02		8.0E+00		7.4E+00		4.3E+00		8.7E-01		NR		NR		8.0E-01	
PCB157	5.6E+01		3.6E+00		3.7E+00		2.0E+00		1.6E-01	U	NR		NR		1.4E-01	U
PCB169	3.9E-01	U	7.8E-01	U	4.9E-01	U	4.9E-01	U	4.8E-01	U	NR		NR		4.2E-01	U
PCB170	2.5E+02		2.5E+01		1.8E+01		8.8E+00		3.4E+00		NR		NR		2.6E+00	
PCB180	3.3E+02		2.8E+01		2.4E+01		1.1E+01		4.9E+00	U-7	NR		NR		4.0E+00	U-7
PCB189	1.0E+01		3.5E-01	U	2.2E-01	U	2.2E-01	U	2.2E-01	U	NR		NR		1.9E-01	U
PCB77	1.5E+01		1.4E+00		1.5E+00		2.5E-01	U	2.4E-01	U	NR		NR		2.1E-01	U
Total PCBs (calc)	2.5E+04		1.2E+03		1.4E+03		4.5E+02		1.2E+02		NR		NR		1.0E+02	
Total PCTs	5.5E+02		7.6E+01		4.7E+01		3.1E+01		9.1E+00		6.5E+03		4.7E+03		7.8E+00	J-11

Table A-3. Results of analysis from sediments collected in the East Intertidal region, continued

Analyte	10-01		10-02		11-01-2		11-02		11-03		12-01		12-02-5		13-01	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	4.3E+01	J-10	1.7E+01	J-10	9.1E+00	J-10	2.3E+01	J-10	1.8E-01	U	5.8E+00	J-10	5.5E+00	J-10	1.6E+00	J-10
PCB105	8.3E+00		1.4E+00		1.0E+00		1.4E+00		1.8E-01	U	2.8E-01	J-11	4.4E-01	J-11	1.6E-01	U
PCB110	1.6E+01		5.9E+00		2.7E+00		1.4E+01		1.8E-01	U	2.0E+00		1.7E+00		4.1E-01	J-11
PCB118	1.4E+01		4.1E+00		2.1E+00		5.3E+00		1.8E-01	U	1.3E+00	U-7	1.7E+00	U-7	1.1E+00	U-7
PCB126	1.7E-01	U	2.3E-01	U	2.0E-01	U	1.8E-01	U	2.0E-01	U	1.7E-01	U	1.6E-01	U	1.8E-01	U
PCB128	7.7E+00	J-10	3.1E+00	J-10	1.7E+00	U-7	1.7E+01	J-10	1.9E-01	U	2.9E+00	J-10	1.3E+00	J-10	1.7E-01	U
PCB138	1.1E+01		5.2E+00		1.4E+00		8.0E+00		2.0E-01	U	1.9E+00		1.6E+00		4.1E-01	J-11
PCB153	4.1E+01	J-10	1.2E+01	J-10	5.4E+00	J-10	1.4E+01	J-10	1.9E-01	U	3.2E+00	J-10	3.6E+00	J-10	9.9E-01	J-10
PCB156	1.3E+00		2.1E-01	U	1.7E-01	U	1.5E-01	U	1.8E-01	U	1.5E-01	U	1.4E-01	U	1.5E-01	U
PCB157	1.9E+00		1.8E-01	U	1.5E-01	U	1.3E-01	U	1.5E-01	U	1.3E-01	U	1.3E-01	U	1.4E-01	U
PCB169	4.1E-01	U	5.5E-01	U	4.5E-01	U	4.0E-01	U	4.6E-01	U	4.1E-01	U	4.0E-01	U	4.5E-01	U
PCB170	7.4E+00		2.1E+00		7.2E-01		1.0E+01		1.7E-01	U	1.0E+00		8.2E-01		1.9E-01	J-11
PCB180	1.2E+01		3.1E+00		1.0E+00		1.4E+01		1.6E-01	U	2.2E+00		1.4E+00		5.0E-01	
PCB189	1.7E-01	U	2.3E-01	U	2.1E-01	U	1.9E-01	U	2.1E-01	U	1.9E-01	U	1.8E-01	U	2.0E-01	U
PCB77	1.4E+00		2.7E-01	U	2.2E-01	U	2.0E-01	U	2.3E-01	U	1.9E-01	U	1.8E-01	U	2.0E-01	U
Total PCBs (calc)	2.4E+02		4.5E+01		3.1E+01		4.9E+01		4.7E+00		4.0E+00		1.4E+01		5.6E+00	
Total PCTs	4.6E+01		2.0E+01		6.0E+00	U	9.1E+01		8.1E+00	U	2.1E+01		6.7E+00	J-11	5.0E+00	U
Analyte	13-02		13-03		13-03D		13-03T		14-01		14-02		UPRVR01		UPRVR02	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	1.4E+00	J-10	5.1E-01	J-10	1.3E+00	J-10	6.1E-01	J-10	1.0E+01	J-10	4.8E-01	U-7	1.4E+00	J-10	1.4E+00	J-10
PCB105	3.0E-01	J-11	1.8E-01	U	2.2E-01	U	2.1E-01	U	1.3E+00		1.7E-01	U	3.0E-01	U	3.5E-01	U
PCB110	5.0E-01	J-11	3.0E-01	J-11	4.5E-01	J-11	3.7E-01	J-11	3.2E+00		1.7E-01	U	3.0E-01	U	3.5E-01	U
PCB118	8.7E-01	U-7	1.1E+00	U-7	1.4E+00	U-7	1.4E+00	U-7	2.3E+00	U-7	1.7E-01	U	3.0E-01	U	3.5E-01	U
PCB126	2.0E-01	U	2.0E-01	U	2.4E-01	U	2.4E-01	U	1.1E-01	U	1.9E-01	U	3.4E-01	U	3.9E-01	U
PCB128	3.5E-01	J-10,11	1.9E-01	U	2.3E-01	U	2.3E-01	U	1.6E+00	J-10	1.9E-01	U	3.2E-01	U	3.8E-01	U
PCB138	4.7E-01	J-11	2.8E-01	J-11	4.8E-01		2.9E-01	J-11	2.4E+00		1.9E-01	U	3.1E-01	U	3.6E-01	U
PCB153	1.3E+00	J-10	6.0E-01	J-10	9.2E-01	J-10	7.8E-01	J-10	7.4E+00	J-10	3.6E-01	U-7	3.0E-01	U	3.5E-01	U
PCB156	1.7E-01	U	1.7E-01	U	2.0E-01	U	2.0E-01	U	9.9E-02	U	1.7E-01	U	2.9E-01	U	3.4E-01	U
PCB157	1.6E-01	U	1.5E-01	U	1.9E-01	U	1.9E-01	U	8.8E-02	U	1.5E-01	U	2.6E-01	U	3.0E-01	U
PCB169	5.0E-01	U	4.8E-01	U	5.9E-01	U	5.9E-01	U	2.8E-01	U	4.8E-01	U	8.3E-01	U	9.6E-01	U
PCB170	1.8E-01	U	1.7E-01	U	2.1E-01	U	2.1E-01	U	8.4E-01		1.7E-01	U	2.9E-01	U	3.4E-01	U
PCB180	4.8E-01		6.8E-01		8.3E-01		4.7E-01		2.6E+00	U-7	1.6E-01	U	2.7E-01	U	3.2E-01	U
PCB189	2.3E-01	U	2.2E-01	U	2.7E-01	U	2.7E-01	U	1.2E-01	U	2.1E-01	U	3.7E-01	U	4.3E-01	U
PCB77	2.2E-01	U	2.1E-01	U	2.6E-01	U	2.6E-01	U	1.2E-01	U	2.1E-01	U	3.7E-01	U	4.3E-01	U
Total PCBs (calc)	8.4E+00		3.1E+00		6.2E+00		4.0E+00		2.8E+01		2.2E+00		7.9E+00		2.7E+00	
Total PCTs	3.9E+00	U	6.3E+00	U	6.4E+00	U	5.4E+00	U	1.1E+01		2.4E+00	U	3.4E+00	U	4.1E+00	J-11

Table A-4. Results of analysis from sediments collected in the East Subtidal region

Analyte	01-01		01-02		01-03		01-04		02-02		02-03		03-01-R		03-02-1		03-03-R	
	ppb	Q	ppb	Q	ppb	Q												
PCB101	2.2E-01	U	1.7E-01	U	9.7E-01	U-7	1.9E-01	U	1.9E-01	U	1.2E-01	U	1.8E+00	J-10	1.6E-01	U	1.9E-01	U
PCB105	2.2E-01	U	1.7E-01	U	1.6E-01	U	2.1E-01	U	2.0E-01	U	1.2E-01	U	1.9E-01	U	1.7E-01	U	1.9E-01	U
PCB110	2.2E-01	U	1.7E-01	U	4.3E-01	U-7	2.1E-01	U	2.0E-01	U	1.2E-01	U	7.2E-01	J-11	1.7E-01	U	1.9E-01	U
PCB118	2.2E-01	U	1.7E-01	U	1.6E-01	U	2.0E-01	U	1.9E-01	U	1.2E-01	U	1.8E-01	U	1.6E-01	U	1.9E-01	U
PCB126	2.4E-01	U	1.9E-01	U	1.8E-01	U	2.3E-01	U	2.1E-01	U	1.3E-01	U	2.0E-01	U	1.8E-01	U	2.1E-01	U
PCB128	2.4E-01	U	1.9E-01	U	1.8E-01	U	2.2E-01	U	2.1E-01	U	1.3E-01	U	2.0E-01	U	1.8E-01	U	2.0E-01	U
PCB138	2.3E-01	U	1.8E-01	U	1.7E-01	U	2.1E-01	U	2.0E-01	U	1.3E-01	U	6.1E-01	U-7	1.7E-01	U	2.0E-01	U
PCB153	2.3E-01	U	1.8E-01	U	1.0E+00	J-10	2.0E-01	U	2.0E-01	U	1.2E-01	U	1.4E+00	J-10	1.7E-01	U	1.9E-01	U
PCB156	2.2E-01	U	1.7E-01	U	1.6E-01	U	2.0E-01	U	1.9E-01	U	1.2E-01	U	1.8E-01	U	1.6E-01	U	1.9E-01	U
PCB157	1.9E-01	U	1.5E-01	U	1.4E-01	U	1.8E-01	U	1.7E-01	U	1.1E-01	U	1.5E-01	U	1.5E-01	U	1.7E-01	U
PCB169	6.1E-01	U	4.7E-01	U	4.4E-01	U	5.6E-01	U	5.3E-01	U	3.3E-01	U	4.8E-01	U	4.5E-01	U	5.2E-01	U
PCB170	2.2E-01	U	1.7E-01	U	1.6E-01	U	2.0E-01	U	1.9E-01	U	1.2E-01	U	1.7E-01	U	1.6E-01	U	1.8E-01	U
PCB180	2.0E-01	U	1.6E-01	U	1.5E-01	U	1.8E-01	U	1.8E-01	U	1.1E-01	U	1.6E-01	U	1.5E-01	U	1.7E-01	U
PCB189	2.8E-01	U	2.1E-01	U	2.0E-01	U	2.5E-01	U	2.4E-01	U	1.5E-01	U	2.2E-01	U	2.1E-01	U	2.4E-01	U
PCB77	2.7E-01	U	2.1E-01	U	2.0E-01	U	2.5E-01	U	2.4E-01	U	1.5E-01	U	2.2E-01	U	2.0E-01	U	2.4E-01	U
Total PCBs (calc)	2.3E+00		1.6E+00		7.7E+00		6.0E-01	U	3.1E+00		4.1E+00		8.3E+00		2.6E+00		5.6E-01	U
Total PCTs	1.8E+00	U	1.7E+00	U	1.7E+00	U	2.7E+00	U	1.6E+00	U	2.1E+00	U	2.7E+00	J-11	2.1E+00	U	1.7E+00	U
Analyte	03-04		03-04D		03-05-R		04-01		04-02		04-03		04-04		04-05-R		05-01	
	ppb	Q	ppb	Q	ppb	Q												
PCB101	1.1E+00	J-10	1.1E+00	J-10	1.2E+01	J-10	2.9E+00	J-10	2.0E+00	J-10	1.2E+00	J-10	7.9E-01	J-10	1.8E-01	U	4.8E+00	J-10
PCB105	1.6E-01	U	1.6E-01	U	3.4E+00	J-10	1.1E+00		2.0E-01	U	1.7E-01	U	1.7E-01	U	1.9E-01	U	4.8E-01	J-11
PCB110	1.6E-01	U	1.6E-01	U	4.6E+00		1.3E+00		2.0E-01	U	4.4E-01	J-11	1.7E-01	U	1.9E-01	U	1.6E+00	
PCB118	1.5E-01	U	1.5E-01	U	4.5E+00	U-7	1.7E+00	U-7	1.9E-01	U	1.7E-01	U	1.6E-01	U	1.8E-01	U	2.6E+00	U-7
PCB126	1.7E-01	U	1.8E-01	U	2.4E-01	U	2.8E-01	U	2.2E-01	U	1.9E-01	U	1.8E-01	U	2.0E-01	U	1.9E-01	U
PCB128	1.6E-01	U	1.6E-01	U	1.5E+00	J-10	6.6E-01	J-10	4.9E-01	J-10	1.8E-01	U	1.7E-01	U	2.0E-01	U	1.0E+00	J-10
PCB138	1.6E-01	U	1.6E-01	U	9.1E-01		1.0E+00		4.2E-01	J-11	3.6E-01	J-11	1.7E-01	U	2.0E-01	U	1.3E+00	
PCB153	9.3E-01	J-10	7.5E-01	J-10	1.2E+01	J-10	2.6E+00	J-10	1.9E+00	J-10	1.7E-01	U	1.6E-01	U	1.8E-01	U	3.1E+00	J-10
PCB156	1.5E-01	U	1.5E-01	U	2.2E-01	U	2.4E-01	U	1.9E-01	U	1.6E-01	U	1.6E-01	U	1.8E-01	U	1.6E-01	U
PCB157	1.3E-01	U	1.3E-01	U	1.9E-01	U	2.2E-01	U	1.7E-01	U	1.4E-01	U	1.4E-01	U	1.5E-01	U	1.5E-01	U
PCB169	4.2E-01	U	4.3E-01	U	6.0E-01	U	6.9E-01	U	5.4E-01	U	4.6E-01	U	4.5E-01	U	4.9E-01	U	4.5E-01	U
PCB170	1.5E-01	U	1.5E-01	U	3.7E-01	J-11	2.5E-01	U	2.0E-01	U	1.7E-01	U	4.5E-01	U	4.9E-01	U	4.5E-01	U
PCB180	1.4E-01	U	1.4E-01	U	2.0E-01	U	2.3E-01	U	1.8E-01	U	1.5E-01	U	1.5E-01	U	1.8E-01	U	1.7E-01	U
PCB189	1.9E-01	U	1.9E-01	U	2.8E-01	U	3.0E-01	U	2.4E-01	U	2.0E-01	U	2.0E-01	U	2.2E-01	U	2.1E-01	U
PCB77	1.9E-01	U	1.9E-01	U	2.7E-01	U	3.1E-01	U	2.4E-01	U	2.0E-01	U	2.0E-01	U	2.2E-01	U	2.2E-01	U
Total PCBs (calc)	5.6E+00		6.1E+00		8.7E+01		1.9E+01		1.5E+01		6.0E+00		5.7E+00		2.3E+00		9.5E+00	
Total PCTs	3.1E+00	U	2.9E+00	U	1.8E+00	J-11	3.4E+00	U	3.1E+00	U	2.8E+00	U	3.1E+00	U	4.1E+00	U	9.5E+00	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	05-02-R		06-01		06-01D		06-02		06-03		06-04		06-05-R		06-06		06-07	
	ppb	Q																
PCB101	2.1E+00	J-10	2.6E+00	J-10	3.0E+00	J-10	3.9E+00	J-10	1.7E+00	J-10	2.6E+00	J-10	3.7E+00	J-10	1.1E+01	J-10	4.0E+00	J-10
PCB105	3.3E-01	U	3.9E-01	U	4.0E-01	U	2.4E-01	U	2.8E-01	U	4.8E-01	U	3.0E-01	U	1.7E+00		1.0E+00	
PCB110	8.4E-01		1.2E+00		1.2E+00		1.2E+00		9.1E-01		8.6E-01		1.2E+00		3.1E+00		1.1E+00	
PCB118	3.2E-01	U	2.2E+00	U-7	2.7E+00	U-7	2.5E+00	U-7	2.2E+00	U-7	1.8E+00	U-7	NR		3.5E+00	U-7	3.3E-01	U
PCB126	3.6E-01	U	4.2E-01	U	4.3E-01	U	2.7E-01	U	3.1E-01	U	5.2E-01	U	3.2E-01	U	3.5E-01	U	3.7E-01	U
PCB128	3.6E-01	U	5.7E-01	J-10	6.8E-01	J-10	2.6E-01	U	5.1E-01	J-10	5.1E-01	U	3.2E-01	U	1.5E+00	J-10	3.6E-01	U
PCB138	6.3E-01	U-7	7.5E-01		1.0E+00		7.8E-01		6.3E-01		9.2E-01		4.9E-01	U-7	3.2E+00		9.5E-01	
PCB153	1.8E+00	J-10	2.8E+00	J-10	3.4E+00	J-10	3.1E+00	J-10	1.1E+00	J-10	2.6E+00	J-10	1.6E+00	J-10	9.2E+00	J-10	2.4E+00	J-10
PCB156	3.2E-01	U	3.6E-01	U	3.7E-01	U	2.3E-01	U	2.6E-01	U	4.4E-01	U	2.8E-01	U	3.0E-01	U	3.3E-01	U
PCB157	2.8E-01	U	3.2E-01	U	3.3E-01	U	2.0E-01	U	2.3E-01	U	3.9E-01	U	2.5E-01	U	2.6E-01	U	2.9E-01	U
PCB169	8.7E-01	U	9.8E-01	U	1.0E+00	U	6.2E-01	U	7.1E-01	U	1.2E+00	U	7.7E-01	U	8.1E-01	U	9.1E-01	U
PCB170	3.2E-01	U	3.6E-01	U	3.7E-01	U	4.8E-01	J-11	2.6E-01	U	4.5E-01	U	2.8E-01	U	1.8E+00		3.3E-01	U
PCB180	1.7E+00		1.3E+00		1.0E+00		3.7E-01		9.3E-01		1.2E+00		2.6E-01	U	4.1E+00		3.0E-01	U
PCB189	4.0E-01	U	4.5E-01	U	4.6E-01	U	2.8E-01	U	3.3E-01	U	5.5E-01	U	3.5E-01	U	3.7E-01	U	4.2E-01	U
PCB77	4.0E-01	U	4.9E-01	U	5.0E-01	U	3.1E-01	U	3.5E-01	U	6.0E-01	U	3.5E-01	U	4.0E-01	U	4.2E-01	U
Total PCBs (calc)	9.6E+00		4.4E+00		1.6E+01		1.1E+01		4.1E+00		3.7E+00		3.0E+00		4.0E+01		1.3E+01	
Total PCTs	6.4E+00	J-11	8.6E+00		8.1E+00	U	5.6E+00	J-11	4.6E+00	J-11	9.3E+00		1.0E+01		7.2E+00	J-11	4.9E+00	J-11
Analyte	06-07D		06-08		07-01		07-02		07-03		07-04		07-05		07-06		07-07-R	
	ppb	Q																
PCB101	3.3E+00	J-10	2.0E+00	J-10	1.9E+01	J-10	2.3E+01	J-10	2.5E+01	J-10	1.7E+01	J-10	1.3E+01	J-10	1.6E+01	J-10	2.6E+00	J-10
PCB105	6.9E-01		2.9E-01	U	2.8E+00		2.3E+00		3.6E+00		3.0E+00		1.2E+00		2.0E+00		3.0E-01	U
PCB110	1.1E+00		1.0E+00		7.6E+00		5.8E+00		9.0E+00		4.8E+00		3.5E+00		4.2E+00		1.2E+00	
PCB118	2.2E-01	U	2.8E-01	U	5.8E+00	U-7	4.3E+00	U-7	7.9E+00	U-7	8.0E+00	U-7	3.3E-01	U	3.2E+00	U-7	2.9E-01	U
PCB126	2.5E-01	U	3.2E-01	U	4.7E-01	U	3.6E-01	U	2.6E-01	U	3.1E-01	U	3.7E-01	U	3.3E-01	U	3.3E-01	U
PCB128	7.3E-01	J-10	3.1E-01	U	4.6E+00	J-10	2.0E+00	J-10	3.7E+00	J-10	2.7E+00	J-10	7.5E-01	J-10	1.4E+00	J-10	3.2E-01	U
PCB138	9.1E-01		3.0E-01	U	6.7E+00		4.8E+00		6.9E+00		4.1E+00		3.1E+00		3.1E+00		4.6E-01	U-7
PCB153	2.9E+00	J-10	2.1E+00	J-10	1.7E+01	J-10	1.5E+01	J-10	1.9E+01	J-10	1.2E+01	J-10	8.7E+00	J-10	1.2E+01	J-10	2.0E+00	J-10
PCB156	2.2E-01	U	2.8E-01	U	4.2E-01	U	3.2E-01	U	2.3E-01	U	2.8E-01	U	3.3E-01	U	2.9E-01	U	2.9E-01	U
PCB157	1.9E-01	U	2.4E-01	U	3.7E-01	U	2.9E-01	U	2.1E-01	U	2.5E-01	U	2.9E-01	U	2.6E-01	U	2.5E-01	U
PCB169	6.0E-01	U	7.5E-01	U	1.2E+00	U	8.9E-01	U	6.4E-01	U	7.7E-01	U	9.1E-01	U	8.0E-01	U	7.9E-01	U
PCB170	2.2E-01	U	2.7E-01	U	3.7E+00		1.4E+00		2.2E+00		3.3E+00		1.1E+00		1.3E+00		2.9E-01	
PCB180	2.0E-01	U	2.6E-01	U	5.9E+00		3.8E+00		4.8E+00		4.5E+00		2.7E+00		3.1E+00		2.7E-01	
PCB189	2.8E-01	U	3.4E-01	U	5.3E-01	U	4.1E-01	U	2.9E-01	U	3.5E-01	U	4.2E-01	U	3.7E-01	U	3.6E-01	U
PCB77	2.8E-01	U	3.4E-01	U	5.3E-01	U	4.1E-01	U	2.9E-01	U	3.5E-01	U	4.2E-01	U	3.7E-01	U	3.6E-01	U
Total PCBs (calc)	1.5E+01		1.1E+01		7.5E+01		6.5E+01		8.4E+01		6.4E+01		3.7E+01		4.9E+01		1.0E+01	
Total PCTs	5.1E+00	J-11	5.1E+00	J-11	2.5E+01		2.0E+01		2.6E+01		1.2E+01		1.1E+01		1.4E+01		5.6E+00	J-11

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	07-08		08-01		08-02		08-03		09-01		09-02		09-03		09-04		09-05	
	ppb	Q																
PCB101	3.6E+00	J-10	7.3E+00	J-10	1.8E+00	J-10	1.1E+01	J-10	2.9E+01	J-10	2.5E+01	J-10	1.0E+02	J-10	3.9E+02	J-10	4.3E+01	J-10
PCB105	3.1E-01	U	9.2E-01	J-10	2.7E-01	U	1.5E+00	J-10	4.3E+00		3.2E+00		1.4E+01		8.1E+01		7.9E+00	
PCB110	1.3E+00		2.3E+00		7.6E-01	J-11	3.2E+00		7.7E+00		9.3E+00		4.5E+01		2.6E+02		1.4E+01	
PCB118	3.0E-01	U	2.1E+00		8.8E-01		3.1E+00		8.7E+00		7.7E+00		3.1E+01		1.9E+02		1.3E+01	
PCB126	3.4E-01	U	2.1E-01	U	3.0E-01	U	2.4E-01	U	6.9E-01	U	6.3E-01	U	5.3E-01	U	4.7E-01	U	6.2E-01	U
PCB128	3.3E-01	U	2.1E-01	U	2.9E-01	U	1.7E+00	J-10	3.8E+00	J-10	3.3E+00	J-10	1.1E+01	J-10	1.3E+02	J-10	4.1E+00	J-10
PCB138	1.2E+00		1.6E+00		5.7E-01		2.4E+00		8.4E+00		6.4E+00		2.8E+01		1.5E+02		8.6E+00	
PCB153	3.0E+00	J-10	4.8E+00	J-10	1.7E+00	J-10	7.7E+00	J-10	2.3E+01	J-10	1.7E+01	J-10	7.5E+01	J-10	2.8E+02	J-10	3.3E+01	J-10
PCB156	3.1E-01	U	1.8E-01	U	2.6E-01	U	2.2E-01	U	6.1E-01	U	5.5E-01	U	3.3E+00		4.1E-01	U	5.5E-01	U
PCB157	2.7E-01	U	1.6E-01	U	2.3E-01	U	1.9E-01	U	5.4E-01	U	4.9E-01	U	4.1E-01	U	3.7E-01	U	4.8E-01	U
PCB169	8.4E-01	U	5.2E-01	U	7.3E-01	U	6.0E-01	U	1.7E+00	U	1.6E+00	U	1.3E+00	U	1.2E+00	U	1.5E+00	U
PCB170	3.1E-01	U	7.8E-01		2.6E-01	U	1.3E+00		7.8E+00		2.3E+00		8.0E+00		7.1E+01		3.9E+00	
PCB180	2.8E-01	U	1.9E+00		2.4E-01	U	3.1E+00		1.1E+01		3.8E+00		9.4E+00		4.5E+01		3.5E+00	
PCB189	3.8E-01	U	2.4E-01	U	3.4E-01	U	2.8E-01	U	7.8E-01	U	7.1E-01	U	6.0E-01	U	5.3E-01	U	7.0E-01	U
PCB77	3.8E-01	U	2.3E-01	U	3.3E-01	U	2.7E-01	U	7.7E-01	U	7.0E-01	U	5.9E-01	U	5.2E-01	U	6.9E-01	U
Total PCBs (calc)	1.1E+01		2.2E+01		7.9E-01	U	5.9E+01		1.1E+02		8.7E+01		3.9E+02		1.5E+03		1.7E+02	
Total PCTs	4.7E+00	J-11	6.6E+00	J-11	1.7E+01		7.3E+00	J-11	1.9E+01		1.0E+01		5.3E+01		9.6E+02		1.7E+01	
Analyte	09-06		10-01		10-02-R		11-01-R		11-02		11-03		11-03D		11-04		11-05	
	ppb	Q																
PCB101	7.2E+00	J-10	1.5E+02	J-10	1.5E+02	J-10	4.3E+02	J-10	2.7E+01	J-10	8.5E+01	J-10	7.5E+01	J-10	3.9E+01	J-10	8.9E+01	J-10
PCB105	1.8E+00		4.0E+01		3.6E+01	J-10	5.1E+01	J-10	6.7E+00		9.6E+00		1.9E+01		5.8E+00		1.2E+01	
PCB110	2.7E+00		1.3E+02		4.7E+01		1.9E+02		8.0E+00		3.0E+01		2.8E+01		1.5E+01		3.6E+01	
PCB118	4.0E+00	U-7	9.3E+01		4.1E+01		1.3E+02		9.1E+00		2.2E+01		2.7E+01		1.1E+01		2.7E+01	
PCB126	3.4E-01	U	8.3E-01	U	3.6E-01	U	2.9E-01	U	7.3E-01	U	3.9E-01	U	5.4E-01	U	5.2E-01	U	5.0E-01	U
PCB128	1.8E+00	J-10	1.0E+02	J-10	2.0E+01	J-10	5.0E+01	J-10	2.7E+00	J-10	9.6E+00	J-10	1.1E+01	J-10	5.2E+00	J-10	1.0E+01	J-10
PCB138	2.5E+00		6.9E+01		3.6E+01		1.2E+02		5.1E+00		2.0E+01		2.0E+01		1.1E+01		2.4E+01	
PCB153	6.0E+00	J-10	1.3E+02	J-10	1.1E+02	J-10	3.0E+02	J-10	1.9E+01	J-10	5.1E+01	J-10	5.0E+01	J-10	2.8E+01	J-10	5.9E+01	J-10
PCB156	3.0E-01	U	7.4E+00		5.0E+00		1.5E+01		6.4E-01	U	2.1E+00		1.7E+00		4.6E-01	U	3.0E+00	
PCB157	2.7E-01	U	6.4E-01	U	2.8E-01	U	3.8E+00		5.7E-01	U	3.0E-01	U	4.2E-01	U	4.0E-01	U	3.9E-01	U
PCB169	8.4E-01	U	2.0E+00	U	8.7E-01	U	6.9E-01	U	1.8E+00	U	9.6E-01	U	1.3E+00	U	1.3E+00	U	1.2E+00	U
PCB170	1.8E+00		5.4E+01		2.0E+01		2.3E+01		3.7E+00		6.8E+00		7.4E+00		5.5E+00		8.0E+00	
PCB180	2.4E+00		1.1E+02		2.9E+01		2.9E+01		3.4E+00		9.8E+00		9.7E+00		6.9E+00		1.0E+01	
PCB189	3.8E-01	U	9.3E-01	U	4.0E-01	U	9.1E-01		8.2E-01	U	4.4E-01	U	6.0E-01	U	5.8E-01	U	5.6E-01	U
PCB77	3.8E-01	U	9.1E-01	U	1.4E+00		1.2E+00		8.1E-01	U	4.3E-01	U	6.0E-01	U	5.7E-01	U	5.5E-01	U
Total PCBs (calc)	3.5E+01		6.9E+02		6.7E+02		1.7E+03		9.0E+01		2.9E+02		2.9E+02		1.5E+02		3.3E+02	
Total PCTs	9.2E+00		7.1E+02		7.3E+01		2.5E+01		2.0E+01		1.9E+01		1.8E+01		1.4E+01		1.9E+01	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	11-06		11-07		11-08		11-09		11-10		11-11-R		11-12		12-01		12-02	
	ppb	Q																
PCB101	5.9E+01	J-10	1.3E+01	J-10	2.2E+01	J-10	2.4E+01	J-10	1.2E+01	J-10	5.3E+01	J-10	6.8E+01	J-10	9.3E+02	J-10	5.4E+02	J-10
PCB105	7.9E+00		1.7E+00		3.4E+00		3.3E+00		1.7E+00		6.0E+00		7.2E+00		1.2E+02		7.3E+01	
PCB110	1.8E+01		3.6E+00	U-7	6.6E+00	U-7	1.1E+01		3.8E+00	U-7	1.7E+01		2.2E+01		7.1E+02		4.2E+02	
PCB118	1.4E+01		4.2E+00		6.2E+00		7.7E+00		3.5E+00		1.4E+01		1.8E+01		4.1E+02		2.4E+02	
PCB126	4.6E-01	U	4.0E-01	U	4.3E-01	U	3.1E-01	U	6.3E-01	U	2.9E-01	U	3.9E-01	U	2.5E-01	U	3.9E-01	U
PCB128	9.1E+00	J-10	2.0E+00	J-10	2.5E+00	J-10	6.2E+00	J-10	2.4E+00	J-10	6.8E+00	J-10	6.0E+00	J-10	1.6E+02	J-10	9.2E+01	J-10
PCB138	1.4E+01		3.8E-01	U	5.3E+00		9.3E+00		2.9E+00		1.4E+01		1.4E+01		3.1E+02		1.9E+02	
PCB153	4.2E+01	J-10	NR		1.5E+01	J-10	2.0E+01	J-10	8.4E+00	J-10	3.3E+01	J-10	4.4E+01	J-10	6.9E+02	J-10	5.1E+02	J-10
PCB156	4.1E-01	U	3.5E-01	U	3.8E-01	U	2.8E-01	U	5.6E-01	U	2.5E-01	U	1.0E+00		3.6E+01		2.3E+01	
PCB157	3.6E-01	U	3.1E-01	U	3.4E-01	U	2.4E-01	U	4.9E-01	U	2.2E-01	U	3.1E-01	U	1.2E+01		7.4E+00	
PCB169	1.1E+00	U	9.8E-01	U	1.1E+00	U	7.7E-01	U	1.6E+00	U	6.8E-01	U	9.7E-01	U	6.2E-01	U	9.7E-01	U
PCB170	1.0E+01		1.1E+00		3.3E+00		4.3E+00		2.0E+00		5.6E+00		6.5E+00		6.9E+01		5.0E+01	
PCB180	1.6E+01		3.2E+00	U-7	4.9E+00	U-7	6.3E+00		2.7E+00	U-7	9.1E+00		1.2E+01		9.5E+01		6.3E+01	
PCB189	5.1E-01	U	4.5E-01	U	4.9E-01	U	3.5E-01	U	7.1E-01	U	3.1E-01	U	4.4E-01	U	1.7E+00		4.4E-01	U
PCB77	5.1E-01	U	4.4E-01	U	4.8E-01	U	3.5E-01	U	7.0E-01	U	3.1E-01	U	4.4E-01	U	6.1E+00		3.6E+00	
Total PCBs (calc)	2.2E+02		4.1E+01		7.4E+01		7.8E+01		3.2E+01		1.6E+02		2.3E+02		7.0E+03		4.1E+03	
Total PCTs	2.6E+01		7.8E+00	J-11	1.2E+01		3.2E+01		1.3E+01		3.3E+01		2.3E+01		1.3E+02		1.1E+02	
Analyte	12-03		12-03D		12-03T		12-04		12-05		12-06		12-07-1		12-08-1		12-09	
	ppb	Q																
PCB101	2.8E+02	J-10	3.1E+02	J-10	3.2E+02	J-10	2.5E+02	J-10	1.3E+03	J-10	1.7E+02	J-10	4.8E+01	J-10	7.0E+01	J-10	5.0E+01	J-10
PCB105	2.3E+01		2.4E+01		2.4E+01		2.4E+01		8.2E+01		1.8E+01		5.5E+00		7.6E+00		6.2E+00	
PCB110	1.3E+02		1.3E+02		1.4E+02		1.1E+02		6.1E+02		7.3E+01		2.2E+01		2.8E+01		2.1E+01	
PCB118	6.9E+01		7.1E+01		6.9E+01		6.6E+01		2.8E+02		4.4E+01		1.5E+01		1.8E+01		1.6E+01	
PCB126	3.2E-01	U	2.5E-01	U	2.6E-01	U	5.5E-01	U	5.5E-01	U	6.2E-01	U	1.8E-01	U	3.3E-01	U	4.6E-01	U
PCB128	3.6E+01	J-10	3.3E+01	J-10	4.2E+01	J-10	2.9E+01	J-10	1.5E+02	J-10	1.8E+01	J-10	5.3E+00	J-10	1.2E+01	J-10	5.6E+00	J-10
PCB138	5.6E+01		5.6E+01		6.1E+01		5.7E+01		2.4E+02		3.7E+01		1.1E+01		2.0E+01		1.3E+01	
PCB153	1.4E+02	J-10	1.3E+02	J-10	1.4E+02	J-10	1.3E+02	J-10	5.2E+02	J-10	1.0E+02	J-10	2.9E+01	J-10	4.0E+01	J-10	3.0E+01	J-10
PCB156	6.9E+00		7.6E+00		8.8E+00		6.9E+00		2.9E+01		3.9E+00		1.2E+00		1.6E+00		4.0E-01	U
PCB157	3.9E+00		2.2E+00		3.2E+00		2.7E+00		1.1E+01		4.8E-01	U	1.5E-01	U	2.6E-01	U	3.6E-01	U
PCB169	7.8E-01	U	6.2E-01	U	6.5E-01	U	1.3E+00	U	1.3E+00	U	1.4E+00	U	4.6E-01	U	7.5E-01	U	1.1E+00	U
PCB170	1.9E+01		1.8E+01		2.4E+01		1.6E+01		6.5E+01		1.4E+01		2.7E+00		6.7E+00		6.4E+00	
PCB180	2.2E+01		2.4E+01		3.1E+01		2.3E+01		8.5E+01		1.9E+01		3.7E+00		1.1E+01		9.5E+00	
PCB189	3.6E-01	U	2.8E-01	U	2.9E-01	U	6.0E-01	U	3.2E+00		6.8E-01	U	2.1E-01	U	3.6E-01	U	5.0E-01	U
PCB77	3.5E-01	U	2.8E-01	U	2.9E-01	U	6.0E-01	U	4.1E+00		6.8E-01	U	2.1E-01	U	3.6E-01	U	5.0E-01	U
Total PCBs (calc)	1.4E+03		1.4E+03		1.4E+03		1.1E+03		6.6E+03		7.4E+02		1.9E+02		3.0E+02		2.0E+02	
Total PCTs	4.3E+01		4.9E+01		5.2E+01		4.2E+01		1.6E+02		4.1E+01		1.3E+01		4.0E+01		1.6E+01	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	12-10		13-01		13-02		13-03		13-04		13-05		13-06		14-01-R		14-02	
	ppb	Q																
PCB101	7.4E+01	J-10	3.4E+01	J-10	5.4E+01	J-10	5.4E+01	J-10	6.7E+01	J-10	7.4E+01	J-10	3.7E+01	J-10	7.8E+01	J-10	3.2E+01	J-10
PCB105	3.4E-01	U	4.0E+00		6.3E+00		6.0E+00		7.1E+00		8.1E+00		3.0E+00		8.4E+00		4.1E+00	
PCB110	9.7E+00		1.3E+01		1.8E+01		1.7E+01		2.5E+01		2.8E+01		1.0E+01		2.5E+01		1.0E+01	
PCB118	5.6E-01	J-11	1.0E+01		1.4E+01		1.3E+01		1.9E+01		2.3E+01		8.4E+00		1.9E+01		9.2E+00	
PCB126	3.8E-01	U	2.2E-01	U	2.4E-01	U	3.7E-01	U	1.9E-01	U	2.4E-01	U	2.3E-01	U	2.0E-01	U	2.2E-01	U
PCB128	1.5E+01	J-10	5.8E+00	U-7	7.5E+00	U-7	7.7E+00	U-7	1.2E+01	J-10	1.1E+01	J-10	5.0E+00	U-7	8.4E+00	U-7	4.2E+00	U-7
PCB138	1.7E+01		9.4E+00		1.3E+01		1.2E+01		1.6E+01		1.9E+01		7.3E+00		1.6E+01		7.3E+00	
PCB153	6.7E+01	J-10	2.4E+01	J-10	3.7E+01	J-10	3.7E+01	J-10	4.4E+01	J-10	4.8E+01	J-10	2.3E+01	J-10	4.7E+01	J-10	2.2E+01	J-10
PCB156	1.9E+00		1.1E+00		1.3E+00		1.5E+00		2.0E+00		2.2E+00		8.0E-01		9.5E-01		7.6E-01	
PCB157	3.0E-01	U	1.7E-01	U	1.9E-01	U	2.8E-01	U	1.7E+00		1.8E-01	U	1.8E-01	U	2.1E+00		8.4E-01	
PCB169	8.8E-01	U	5.1E-01	U	5.7E-01	U	8.6E-01	U	4.4E-01	U	5.6E-01	U	5.4E-01	U	4.7E-01	U	5.2E-01	U
PCB170	2.6E+01		4.2E+00		6.5E+00		5.9E+00		1.1E+01		8.0E+00		4.8E+00		6.0E+00		3.7E+00	
PCB180	5.1E+01		6.1E+00		9.2E+00		9.3E+00		1.7E+01		1.0E+01		7.6E+00		7.6E+00		5.8E+00	
PCB189	4.2E-01	U	2.3E-01	U	2.6E-01	U	3.9E-01	U	2.0E-01	U	2.6E-01	U	2.5E-01	U	2.2E-01	U	2.4E-01	U
PCB77	4.2E-01	U	2.5E-01	U	2.9E-01	U	4.3E-01	U	2.2E-01	U	2.8E-01	U	2.7E-01	U	2.4E-01	U	2.6E-01	U
Total PCBs (calc)	3.5E+02		1.2E+02		2.0E+02		2.0E+02		2.4E+02		2.3E+02		1.1E+02		2.5E+02		1.2E+02	
Total PCTs	9.7E+00		1.7E+01		2.1E+01		1.5E+01		4.5E+01		5.2E+01		2.2E+01		1.6E+01		1.1E+01	
Analyte	14-03-1		14-04		14-05		15-01		15-02		15-03		16-01		16-02		16-03	
	ppb	Q																
PCB101	3.2E+01	J-10	3.6E+01	J-10	4.9E+01	J-10	3.9E+01	J-10	4.1E+01	J-10	4.1E+01	J-10	3.4E+01	J-10	3.6E+01	J-10	4.9E+01	J-10
PCB105	4.3E+00		5.1E+00		6.5E+00		4.0E+00		4.9E+00		3.9E+00		3.7E+00		3.8E+00		5.3E+00	
PCB110	1.1E+01		1.4E+01		1.7E+01		9.5E+00		1.2E+01		1.2E+01		9.7E+00		9.6E+00		1.4E+01	
PCB118	9.8E+00		1.2E+01		1.4E+01		7.8E+00		9.7E+00		1.1E+01		8.6E+00		7.6E+00		1.1E+01	
PCB126	3.0E-01	U	3.4E-01	U	2.3E-01	U	2.8E-01	U	2.5E-01	U	2.4E-01	U	3.1E-01	U	3.6E-01	U	2.8E-01	U
PCB128	4.8E+00	U-7	7.3E+00	U-7	7.0E+00	U-7	5.6E+00	U-7	5.8E+00	U-7	5.7E+00	U-7	3.9E+00	J-10	4.0E+00	J-10	5.5E+00	J-10
PCB138	7.3E+00		8.6E+00		1.2E+01		8.1E+00		9.1E+00		8.4E+00		7.6E+00		7.8E+00		1.1E+01	
PCB153	2.5E+01	J-10	2.4E+01	J-10	3.3E+01	J-10	2.6E+01	J-10	2.8E+01	J-10	2.6E+01	J-10	2.4E+01	J-10	2.5E+01	J-10	3.3E+01	J-10
PCB156	2.7E-01	U	3.0E-01	U	1.1E+00		2.5E-01	U	5.6E-01		1.1E+00		2.8E-01	U	3.2E-01	U	1.2E+00	
PCB157	2.3E-01	U	2.6E-01	U	1.8E-01	U	2.2E-01	U	1.9E-01	U	1.9E-01	U	2.4E-01	U	2.8E-01	U	2.2E-01	U
PCB169	7.1E-01	U	7.9E-01	U	5.4E-01	U	6.6E-01	U	5.8E-01	U	5.6E-01	U	7.5E-01	U	8.6E-01	U	6.6E-01	U
PCB170	4.2E+00		6.2E+00		6.3E+00		5.2E+00		4.8E+00		5.0E+00		6.4E+00		4.6E+00		6.1E+00	
PCB180	6.3E+00		1.1E+01		8.8E+00		7.7E+00		7.5E+00		6.1E+00		5.8E+00		6.6E+00		7.9E+00	
PCB189	3.3E-01	U	3.6E-01	U	2.5E-01	U	3.0E-01	U	2.7E-01	U	2.6E-01	U	3.1E-01	U	3.6E-01	U	2.8E-01	U
PCB77	3.6E-01	U	3.9E-01	U	2.7E-01	U	3.3E-01	U	2.9E-01	U	2.8E-01	U	3.7E-01	U	4.2E-01	U	3.2E-01	U
Total PCBs (calc)	1.4E+02		1.1E+02		1.8E+02		1.4E+02		1.7E+02		1.4E+02		1.4E+02		1.2E+02		1.7E+02	
Total PCTs	1.3E+01		4.6E+01		2.4E+01		1.5E+01		1.4E+01		1.7E+01		1.3E+01		1.6E+01		1.9E+01	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	16-04		16-05		17-01		17-02-2		18-01		18-02-R		18-03		18-04		19-01	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	5.0E+01	J-10	4.7E+01	J-10	6.5E+01	J-10	6.3E+01	J-10	3.2E+01	J-10	3.0E+01	J-10	3.8E+01	J-10	4.7E+01	J-10	2.8E+01	J-10
PCB105	7.3E+00		6.2E+00		6.7E+00		6.9E+00		4.2E+00		3.3E+00		3.9E+00		6.4E+00		3.9E+00	
PCB110	1.5E+01		1.6E+01		1.5E+01		1.8E+01		9.9E+00		7.1E+00		1.2E+01		1.4E+01		8.2E+00	
PCB118	1.3E+01		1.3E+01		1.2E+01		1.5E+01		8.9E+00		7.3E+00		9.2E+00		1.2E+01		8.6E+00	
PCB126	2.5E-01	U	2.6E-01	U	3.3E-01	U	3.2E-01	U	2.4E-01	U	2.8E-01	U	2.1E-01	U	2.3E-01	U	2.5E-01	U
PCB128	6.3E+00	J-10	6.8E+00	J-10	6.7E+00	J-10	9.1E+00	J-10	4.5E+00	J-10	4.7E+00	U-7	6.2E+00	U-7	6.4E+00	U-7	4.8E+00	U-7
PCB138	1.2E+01		1.2E+01		1.3E+01		1.1E+01		8.8E+00		5.8E+00		9.1E+00		1.1E+01		6.8E+00	
PCB153	3.8E+01	J-10	3.5E+01	J-10	4.9E+01	J-10	4.0E+01	J-10	2.5E+01	J-10	2.0E+01	J-10	2.6E+01	J-10	3.5E+01	J-10	2.0E+01	J-10
PCB156	1.3E+00		1.1E+00		1.7E+00		1.0E+00		1.2E+00		2.5E-01	U	1.0E+00		1.4E+00		2.2E-01	U
PCB157	2.0E-01	U	2.0E-01	U	2.6E-01	U	2.5E-01	U	1.9E-01	U	2.2E-01	U	1.6E-01	U	1.8E-01	U	1.9E-01	U
PCB169	6.0E-01	U	6.1E-01	U	7.8E-01	U	7.6E-01	U	5.8E-01	U	6.5E-01	U	4.8E-01	U	5.3E-01	U	5.8E-01	U
PCB170	7.3E+00		6.7E+00		1.2E+01		8.8E+00		7.1E+00		4.8E+00		5.8E+00		6.1E+00		4.4E+00	
PCB180	1.0E+01		9.6E+00		1.3E+01		1.3E+01		7.3E+00		6.1E+00		8.1E+00		8.6E+00		6.1E+00	
PCB189	2.5E-01	U	2.6E-01	U	3.3E-01	U	3.2E-01	U	2.4E-01	U	3.0E-01	U	2.2E-01	U	2.5E-01	U	2.7E-01	U
PCB77	2.9E-01	U	3.0E-01	U	3.8E-01	U	3.7E-01	U	2.8E-01	U	3.2E-01	U	2.4E-01	U	2.6E-01	U	2.9E-01	U
Total PCBs (calc)	2.0E+02		1.9E+02		3.0E+02		2.2E+02		1.3E+02		1.0E+02		1.4E+02		1.8E+02		1.0E+02	
Total PCTs	2.5E+01		2.2E+01		1.8E+01		5.2E+01		1.9E+01		1.8E+01		2.2E+01		2.1E+01		1.6E+01	
Analyte	19-02		19-03-1		19-03-1D		19-04		19-05		19-06		19-06D		20-01		20-02	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	2.6E+01	J-10	3.0E+01	J-10	3.7E+01	J-10	3.4E+01	J-10	2.7E+01	J-10	2.9E+01	J-10	2.7E+01	J-10	3.3E+01	J-10	2.9E+01	J-10
PCB105	2.5E+00		4.0E+00		3.7E+00		3.1E+00		2.8E+00		3.0E+00		2.7E+00		4.4E+00		3.9E+00	
PCB110	6.5E+00		8.4E+00		1.0E+01		8.9E+00		7.5E+00		7.1E+00		6.7E+00		8.8E+00		7.2E+00	
PCB118	6.9E+00		9.2E+00		9.5E+00		8.2E+00		7.3E+00		7.5E+00		6.6E+00		9.3E+00		7.5E+00	
PCB126	2.4E-01	U	3.5E-01	U	2.4E-01	U	2.8E-01	U	2.8E-01	U	2.9E-01	U	2.8E-01	U	2.8E-01	U	2.6E-01	U
PCB128	3.7E+00	U-7	5.8E+00	U-7	4.9E+00	J-10	4.0E+00	J-10	4.1E+00	U-7	3.1E+00	J-10	2.9E+00	J-10	4.4E+00	J-10	3.8E+00	J-10
PCB138	5.9E+00		7.5E+00		8.5E+00		7.4E+00		6.1E+00		5.9E+00		5.9E+00		8.0E+00		6.7E+00	
PCB153	1.9E+01	J-10	2.3E+01	J-10	2.8E+01	J-10	2.3E+01	J-10	1.9E+01	J-10	2.0E+01	J-10	1.9E+01	J-10	2.4E+01	J-10	2.1E+01	J-10
PCB156	4.4E-01	J-11	3.0E-01	U	8.4E-01		1.1E+00		2.4E-01	U	8.3E-01		7.4E-01		1.1E+00		9.6E-01	
PCB157	1.8E-01	U	2.7E-01	U	1.9E-01	U	6.6E-01		2.1E-01	U	7.0E-01		6.3E-01		6.6E-01		8.3E-01	
PCB169	5.5E-01	U	8.0E-01	U	5.8E-01	U	6.8E-01	U	6.3E-01	U	7.2E-01	U	6.8E-01	U	7.0E-01	U	6.3E-01	U
PCB170	3.2E+00		5.7E+00		4.7E+00		4.2E+00		4.2E+00		4.3E+00		3.9E+00		5.2E+00		4.6E+00	
PCB180	5.0E+00		7.2E+00		7.9E+00		6.2E+00		5.6E+00		6.6E+00		6.0E+00		6.1E+00		5.9E+00	
PCB189	2.5E-01	U	3.7E-01	U	2.7E-01	U	3.1E-01	U	2.9E-01	U	3.3E-01	U	3.1E-01	U	3.2E-01	U	2.9E-01	U
PCB77	2.7E-01	U	4.0E-01	U	2.6E-01	U	3.1E-01	U	3.1E-01	U	3.2E-01	U	3.1E-01	U	3.1E-01	U	2.8E-01	U
Total PCBs (calc)	8.3E+01		1.1E+02		1.2E+02		1.2E+02		9.3E+01		9.0E+01		8.5E+01		1.1E+02		1.0E+02	
Total PCTs	1.7E+01		1.8E+01		4.1E+01		1.4E+01		1.7E+01		2.0E+01		1.5E+01		1.9E+01		2.0E+01	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Analyte	20-03		20-04		20-05		20-06		21-01		21-02		21-03		21-04		22-01	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	3.1E+01	J-10	1.3E+02	J-10	2.9E+01	J-10	8.5E+01	J-10	3.9E+01	J-10	2.8E+01	J-10	1.1E+03	J-10	4.4E+01	J-10	5.5E+01	J-10
PCB105	3.6E+00		3.5E+01		3.5E+00		2.3E-01	U	3.8E+00		2.3E+00		1.7E+02		5.0E+00		5.9E+00	
PCB110	7.6E+00		5.7E+01		7.7E+00		2.9E+01		1.1E+01		6.6E+00		5.3E+02		1.2E+01		1.6E+01	
PCB118	8.2E+00		5.7E+01		8.1E+00		2.5E+01		1.0E+01		7.1E+00		4.0E+02		1.2E+01		1.3E+01	
PCB126	2.8E-01	U	2.8E-01	U	2.2E-01	U	2.6E-01	U	2.2E-01	U	2.7E-01	U	3.2E-01	U	2.7E-01	U	1.8E-01	U
PCB128	3.9E+00	J-10	3.5E+01	J-10	4.3E+00	J-10	1.2E+01	J-10	4.1E+00	J-10	2.9E+00	J-10	1.5E+02	J-10	5.0E+00	J-10	7.9E+00	J-10
PCB138	7.5E+00		6.6E+01		6.9E+00		2.5E+01		7.5E+00		5.8E+00		3.7E+02		1.0E+01		1.3E+01	
PCB153	2.3E+01	J-10	1.1E+02	J-10	2.2E+01	J-10	5.7E+01	J-10	2.6E+01	J-10	2.0E+01	J-10	8.6E+02	J-10	3.2E+01	J-10	3.9E+01	J-10
PCB156	8.8E-01		2.1E+01		9.4E-01		2.9E+00		7.6E-01		5.8E-01		5.7E+01		1.3E+00		1.3E+00	
PCB157	5.9E-01		5.5E+00		4.1E-01		2.1E+00		7.2E-01		6.7E-01		1.3E+01		2.1E-01	U	1.2E+00	
PCB169	6.8E-01	U	7.0E-01	U	5.4E-01	U	6.3E-01	U	5.4E-01	U	6.7E-01	U	7.9E-01	U	6.7E-01	U	4.5E-01	U
PCB170	4.5E+00		3.0E+01		4.9E+00		1.0E+01		5.3E+00		3.8E+00		4.7E+01		6.4E+00		7.7E+00	
PCB180	5.6E+00		3.0E+01		6.1E+00		1.3E+01		7.6E+00		5.0E+00		5.9E+01		8.7E+00		1.1E+01	
PCB189	3.1E-01	U	3.2E+00		2.4E-01	U	2.9E-01	U	2.4E-01	U	3.0E-01	U	1.9E+00		3.0E-01	U	2.0E-01	U
PCB77	3.1E-01	U	3.1E-01	U	2.4E-01	U	2.8E-01	U	2.4E-01	U	2.9E-01	U	1.4E+00		1.0E+00		2.0E-01	U
Total PCBs (calc)	1.1E+02		7.0E+02		1.1E+02		3.0E+02		1.3E+02		9.1E+01		4.4E+03		1.6E+02		1.9E+02	
Total PCTs	1.5E+01		3.1E+01		1.3E+01		4.2E+01		2.9E+01		1.9E+01		1.9E+01		2.8E+01		2.9E+01	
Analyte	22-02		22-03		22-04		22-04D		22-04T		23-01		23-02		23-03		23-04	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	5.8E+01	J-10	3.5E+01	J-10	4.5E+01	J-10	4.5E+01	J-10	4.9E+01	J-10	4.3E+00	J-10	3.2E+01	J-10	3.2E+01	J-10	3.5E+01	J-10
PCB105	6.7E+00		9.7E+00		5.3E+00		1.0E+01		5.7E+00		2.6E-01	J-11	4.5E+00		5.4E+00		5.2E+00	
PCB110	1.9E+01		8.8E+00		1.2E+01		1.2E+01		1.3E+01		1.0E+00		7.4E+00		8.0E+00		9.0E+00	
PCB118	1.6E+01		9.6E+00		1.2E+01		1.5E+01		1.2E+01		1.7E+00	U-7	8.6E+00		8.1E+00		8.5E+00	
PCB126	1.6E-01	U	2.0E-01	U	2.0E-01	U	1.9E-01	U	3.0E-01	U	1.4E-01	U	2.8E-01	U	2.8E-01	U	3.2E-01	U
PCB128	7.7E+00	J-10	4.5E+00	J-10	5.8E+00	J-10	6.2E+00	J-10	6.9E+00	J-10	3.9E-01	J-10,11	4.2E+00	J-10	4.8E+00	U-7	5.3E+00	U-7
PCB138	1.4E+01		7.4E+00		9.5E+00		9.3E+00		1.0E+01		8.4E-01	U-7	7.7E+00		7.5E+00		8.3E+00	
PCB153	4.2E+01	J-10	2.5E+01	J-10	3.2E+01	J-10	3.2E+01	J-10	3.5E+01	J-10	3.1E+00	J-10	2.4E+01	J-10	2.3E+01	J-10	2.6E+01	J-10
PCB156	1.6E+00		7.3E-01		1.0E+00		1.1E+00		9.7E-01		1.3E-01	U	6.7E-01		5.9E-01		9.5E-01	
PCB157	6.3E-01		1.6E-01	U	1.6E-01	U	1.5E-01	U	2.3E-01	U	1.1E-01	U	2.2E-01	U	2.2E-01	U	2.6E-01	U
PCB169	4.0E-01	U	5.1E-01	U	4.9E-01	U	4.7E-01	U	7.4E-01	U	3.6E-01	U	6.9E-01	U	6.9E-01	U	8.0E-01	U
PCB170	7.6E+00		4.3E+00		6.2E+00		6.4E+00		6.6E+00		4.4E-01	J-11	5.6E+00		6.4E+00		5.9E+00	
PCB180	1.1E+01		7.0E+00		9.1E+00		1.1E+01		9.5E+00		8.9E-01	U-7	7.9E+00		8.0E+00		7.7E+00	
PCB189	1.8E-01	U	2.2E-01	U	2.2E-01	U	2.1E-01	U	3.2E-01	U	1.6E-01	U	3.0E-01	U	3.1E-01	U	3.6E-01	U
PCB77	1.8E-01	U	2.2E-01	U	2.2E-01	U	2.1E-01	U	3.3E-01	U	1.6E-01	U	3.0E-01	U	3.1E-01	U	3.6E-01	U
Total PCBs (calc)	2.5E+02		1.3E+02		1.6E+02		1.8E+02		1.8E+02		1.0E+01		1.1E+02		1.3E+02		1.3E+02	
Total PCTs	3.2E+01		2.2E+01		2.6E+01		3.0E+01		2.6E+01		6.0E+00	J-11	1.9E+01		2.3E+01		2.3E+01	

Table A-4. Results of analysis from sediments collected in the East Subtidal region, continued

Table A-5. Results of analysis from sediments collected in the Channel region

Analyte	01-01		01-02		01-03		01-04		02-01		02-02		02-03		02-03D		03-01	
	ppb	Q																
PCB101	8.6E+00	J-10	1.8E+01	J-10	9.9E+00	J-10	9.0E+00	J-10	1.0E+01	J-10	1.2E+01	J-10	1.3E+01	J-10	1.4E+01	J-10	2.1E+01	J-10
PCB105	1.3E+00		3.2E+00		1.8E+00		1.8E+00	U	2.6E+00		2.4E+00		1.6E+00		1.6E+00		4.6E+00	
PCB110	2.2E+00		4.6E+00		3.1E+00		3.6E+00		2.5E+00		3.4E+00		3.1E+00		3.3E+00		7.9E+00	
PCB118	2.4E+00		4.7E+00		3.1E+00		3.8E+00		3.0E+00		4.1E+00		3.9E+00		4.3E+00		1.0E+01	
PCB126	2.7E-01	U	1.4E+00	U	2.9E-01	U	2.0E+00	U	6.0E-01	U	1.1E+00	U	6.8E-01	U	1.1E+00	U	4.4E-01	U
PCB128	1.3E+00	J-10	5.2E+00	U-7	2.5E+00	U-7	3.6E+00	J-10	1.9E+00	J-10	3.4E+00	J-10	4.3E+00	J-10	7.4E+00	J-10	5.1E+00	J-10
PCB138	1.9E+00		3.5E+00		2.7E+00		1.9E+00		1.7E+00		2.2E+00		2.4E+00		3.1E+00		6.1E+00	
PCB153	6.3E+00	J-10	1.2E+01	J-10	7.2E+00	J-10	5.4E+00	J-10	5.3E+00	J-10	6.9E+00	J-10	8.6E+00	J-10	9.7E+00	J-10	1.6E+01	J-10
PCB156	2.4E-01	U	1.2E+00	U	2.5E-01	U	1.7E+00	U	5.2E-01	U	9.5E-01	U	5.9E-01	U	9.7E-01	U	3.8E-01	U
PCB157	2.1E-01	U	1.1E+00	U	2.3E-01	U	1.5E+00	U	4.6E-01	U	8.3E-01	U	5.1E-01	U	8.5E-01	U	3.3E-01	U
PCB169	6.5E-01	U	3.4E+00	U	7.1E-01	U	4.8E+00	U	1.5E+00	U	2.7E+00	U	1.7E+00	U	2.7E+00	U	1.1E+00	U
PCB170	7.2E-01		4.0E+00		1.4E+00		1.7E+00		1.6E+00		2.0E+00		1.1E+00		1.4E+00		1.6E+00	
PCB180	2.1E+00		4.5E+00		2.5E+00		1.7E+00		9.4E-01		1.7E+00		1.8E+00		2.6E+00		3.1E+00	
PCB189	3.0E-01	U	1.5E+00	U	3.2E-01	U	2.2E+00	U	6.6E-01	U	1.2E+00	U	7.5E-01	U	1.2E+00	U	4.8E-01	U
PCB77	2.9E-01	U	1.5E+00	U	3.2E-01	U	2.1E+00	U	6.4E-01	U	1.2E+00	U	7.3E-01	U	1.2E+00	U	4.7E-01	U
Total PCBs (calc)	2.6E+01		6.1E+01		3.7E+01		3.0E+01		2.8E+01		3.3E+01		5.1E+01		5.1E+01		7.9E+01	
Total PCTs	6.9E+00	J-11	1.3E+01		8.4E+00		8.2E+00		1.4E+01		9.5E+00		8.4E+00		1.1E+01		8.7E+00	
Analyte	03-02		03-03		03-04		04-01		04-02		04-03		04-04-R		05-01		05-02	
	ppb	Q																
PCB101	6.5E+00	J-10	8.9E+00	J-10	6.2E+00	J-10	2.8E+01	J-10	6.7E+02	J-10	2.4E+02	J-10	6.9E+00	J-10	3.4E+01	J-10	2.6E+01	J-10
PCB105	1.6E+00	U	2.4E+00		5.5E+00		3.4E+00		2.5E+01		1.3E+01		3.5E-01	U	4.2E+00		NR	
PCB110	1.9E+00		2.6E+00		2.3E+00		9.1E+00		1.2E+02		5.9E+01		1.5E+00		8.1E+00		9.7E+00	
PCB118	1.6E+00	U	3.4E+00		3.3E+00		7.7E+00	U-7	4.5E+01		3.3E+01		3.8E+00	U-7	8.1E+00		7.6E+00	
PCB126	1.8E+00	U	7.3E-01	U	1.3E+00	U	3.4E-01	U	3.7E-01	U	4.1E-01	U	3.8E-01	U	3.4E-01	U	2.6E-01	U
PCB128	1.8E+00	U	2.7E+00	J-10	2.7E+00	J-10	3.8E+00	J-10	1.7E+02	J-10	3.9E+01	J-10	3.7E-01	U	3.6E+00	J-10	4.4E+00	U-7
PCB138	1.8E+00		1.5E+00		1.6E+00		7.0E+00		2.9E+02		7.2E+01		1.3E+00	U-7	4.2E+00		8.3E+00	
PCB153	1.7E+00	U	6.0E+00	J-10	4.0E+00	J-10	1.9E+01	J-10	8.3E+02	J-10	2.0E+02	J-10	4.9E+00	J-10	2.4E+01	J-10	1.9E+01	J-10
PCB156	1.6E+00	U	6.4E-01	U	1.2E+00	U	3.1E-01	U	2.7E+01		6.4E+00		3.3E-01	U	7.5E-01		1.0E+00	
PCB157	1.4E+00	U	5.6E-01	U	1.0E+00	U	2.7E-01	U	6.6E+00		1.9E+00		2.9E-01	U	2.6E-01	U	2.0E-01	U
PCB169	4.4E+00	U	1.8E+00	U	3.2E+00	U	8.6E-01	U	9.2E-01	U	1.0E+00	U	9.0E-01	U	8.2E-01	U	6.2E-01	U
PCB170	1.6E+00	U	1.7E+00		2.0E+00		3.3E+00		3.2E+02		6.2E+01		8.4E-01		3.1E+00		3.3E+00	
PCB180	1.8E+00		1.1E+00		1.6E+00		5.7E+00		5.0E+02		1.0E+02		1.9E+00		2.5E+00		5.0E+00	U-7
PCB189	2.0E+00	U	8.1E-01	U	1.5E+00	U	3.9E-01	U	6.9E+00		1.3E+00		4.1E-01	U	3.7E-01	U	2.8E-01	U
PCB77	1.9E+00	U	7.9E-01	U	1.4E+00	U	3.8E-01	U	4.1E-01	U	4.5E-01	U	4.1E-01	U	7.0E-01		3.1E-01	U
Total PCBs (calc)	1.4E+01		2.8E+01		2.5E+01		1.2E+02		4.1E+03		1.1E+03		2.2E+01		2.2E+02		4.3E+02	
Total PCTs	6.7E+00	J-11	5.9E+00	J-11	5.3E+00	J-11	1.5E+01		4.6E+01		3.5E+01		5.5E+00	J-11	4.8E+00	J-11	1.8E+01	

Table A-5. Results of analysis from sediments collected in the Channel region, continued

Analyte	06-01		06-03		06-03		07-01		07-02		07-02D		07-02T		07-03		08-01	
	ppb	Q																
PCB101	2.4E+01	J-10	5.2E+01	J-10	2.5E+01	J-10	2.5E+02	J-10	1.2E+01	J-10	1.3E+01	J-10	1.4E+01	J-10	2.4E+01	J-10	4.1E+01	J-10
PCB105	2.7E+00		5.9E+00		1.6E+00		2.6E+01		1.4E+00		1.3E+00		1.7E+00		1.3E+00		4.2E+00	
PCB110	6.3E+00		2.2E+01		6.5E+00		1.1E+02		3.2E+00		3.3E+00		3.9E+00		7.1E+00		1.0E+01	
PCB118	5.2E+00		1.6E+01		5.1E+00		7.4E+01		2.8E+00		3.0E+00		3.4E+00		5.0E+00		8.3E+00	
PCB126	2.5E-01	U	2.4E-01	U	3.4E-01	U	2.2E-01	U	2.3E-01	U	2.4E-01	U	2.1E-01	U	2.1E-01	U	2.9E-01	U
PCB128	3.2E+00	U-7	1.7E+01	J-10	3.0E+00	U-7	2.9E+01	J-10	2.1E+00	U-7	1.7E+00	U-7	1.9E+00	U-7	5.1E+00	J-10	4.9E+00	J-10
PCB138	4.6E+00		1.2E+01		5.2E+00		6.5E+01		2.5E+00		2.5E+00		3.0E+00		4.8E+00		7.9E+00	
PCB153	1.4E+01	J-10	3.0E+01	J-10	1.5E+01	J-10	2.0E+02	J-10	8.3E+00	J-10	8.2E+00	J-10	9.2E+00	J-10	1.4E+01	J-10	2.7E+01	J-10
PCB156	5.4E-01		9.8E-01		3.1E-01	U	7.7E+00		2.1E-01	U	2.2E-01	U	1.9E-01	U	4.5E-01	J-11	9.0E-01	
PCB157	2.0E-01	U	2.0E+00		2.7E-01	U	3.6E+00		1.8E-01	U	1.9E-01	U	1.7E-01	U	1.7E-01	U	2.3E-01	U
PCB169	6.3E-01	U	6.0E-01	U	8.5E-01	U	5.5E-01	U	5.8E-01	U	6.0E-01	U	5.4E-01	U	5.4E-01	U	7.2E-01	U
PCB170	2.4E+00		8.6E+00		1.5E+00		2.1E+01		1.1E+00		1.3E+00		1.4E+00		1.8E+00		5.2E+00	
PCB180	3.5E+00		1.9E+01		3.7E+00		2.9E+01		2.4E+00		2.7E+00		2.7E+00		5.9E+00		7.3E+00	
PCB189	2.9E-01	U	2.8E-01	U	3.9E-01	U	2.5E-01	U	2.6E-01	U	2.8E-01	U	2.5E-01	U	2.5E-01	U	3.3E-01	U
PCB77	2.8E-01	U	2.7E-01	U	3.8E-01	U	2.4E-01	U	2.6E-01	U	2.7E-01	U	2.4E-01	U	2.4E-01	U	3.2E-01	U
Total PCBs (calc)	7.2E+01		1.1E+02		7.7E+01		1.2E+03		3.8E+01		3.9E+01		4.2E+01		3.8E+01		1.3E+02	
Total PCTs	1.1E+01		1.3E+02		1.5E+01		7.2E+01		8.4E+00		8.3E+00		9.7E+00		5.5E+01		2.8E+01	
Analyte	08-02		09-01		09-02		09-03		10-01		10-02		11-01		11-02		11-03	
	ppb	Q																
PCB101	3.4E+01	J-10	2.3E+01	J-10	3.3E+01	J-10	3.6E+01	J-10	3.0E+01	J-10	1.6E+01	J-10	2.6E+01	J-10	6.0E+01	J-10	2.5E+01	J-10
PCB105	3.4E+00		2.9E+00		5.1E+00		4.0E+00		3.0E+00		6.2E-01		2.7E+00		6.7E+00		2.7E+00	
PCB110	8.6E+00		5.5E+00		8.2E+00		9.5E+00		6.7E+00		4.0E+00		6.7E+00		1.8E+01		7.0E+00	
PCB118	7.1E+00		5.1E+00		8.3E+00		8.2E+00		6.2E+00		3.8E+00		5.8E+00		1.4E+01		5.6E+00	
PCB126	2.8E-01	U	2.8E-01	U	2.9E-01	U	2.4E-01	U	2.9E-01	U	2.5E-01	U	2.1E-01	U	2.4E-01	U	2.4E-01	U
PCB128	3.8E+00	J-10	4.0E+00	J-10	4.8E+00	J-10	4.6E+00	J-10	4.9E+00	J-10	2.7E+00	J-10	3.8E+00	J-10	9.7E+00	J-10	3.8E+00	U-7
PCB138	5.9E+00		5.1E+00		7.0E+00		7.3E+00		7.1E+00		3.1E+00		6.0E+00		1.4E+01		5.4E+00	
PCB153	2.1E+01	J-10	1.8E+01	J-10	2.3E+01	J-10	2.4E+01	J-10	2.2E+01	J-10	1.1E+01	J-10	1.8E+01	J-10	4.2E+01	J-10	1.8E+01	J-10
PCB156	2.5E-01	U	6.9E-01		7.0E-01		9.2E-01		6.4E-01		2.2E-01	U	1.9E-01	U	1.6E+00		2.1E-01	U
PCB157	2.2E-01	U	2.2E-01	U	2.3E-01	U	1.9E-01	U	2.3E-01	U	2.0E-01	U	1.7E-01	U	1.9E-01	U	1.9E-01	U
PCB169	7.0E-01	U	7.1E-01	U	7.3E-01	U	6.1E-01	U	7.3E-01	U	6.3E-01	U	5.4E-01	U	6.1E-01	U	5.8E-01	U
PCB170	3.5E+00		5.3E+00		5.2E+00		4.7E+00		5.7E+00		1.1E+00		3.5E+00		9.1E+00		3.9E+00	
PCB180	5.6E+00		8.3E+00		7.4E+00		7.1E+00		7.8E+00		3.1E+00		5.3E+00		1.3E+01		6.0E+00	
PCB189	3.2E-01	U	3.2E-01	U	3.3E-01	U	2.8E-01	U	3.3E-01	U	2.9E-01	U	2.4E-01	U	2.8E-01	U	2.6E-01	U
PCB77	3.1E-01	U	3.1E-01	U	3.2E-01	U	2.7E-01	U	3.3E-01	U	2.8E-01	U	2.4E-01	U	2.7E-01	U	2.6E-01	U
Total PCBs (calc)	1.2E+02		8.3E+01		1.1E+02		1.2E+02		1.0E+02		5.1E+01		8.2E+01		2.1E+02		8.3E+01	
Total PCTs	1.5E+01		1.4E+01		2.1E+01		1.7E+01		2.0E+01		8.0E+00	J-11	1.8E+01		4.2E+01		1.7E+01	

Table A-5. Results of analysis from sediments collected in the Channel region, continued

Analyte	12-01-2		12-02		13-01		13-02		13-03						
	ppb	Q													
PCB101	3.7E+02	J-10	3.6E+01	J-10	2.5E+01	J-10	3.1E+01	J-10	3.1E+01	J-10					
PCB105	3.9E+01		4.4E+00		2.6E+00		4.2E+00		3.4E+00						
PCB110	1.2E+02		1.0E+01		7.1E+00		8.6E+00		8.0E+00						
PCB118	8.4E+01		8.7E+00		5.3E+00		6.8E+00		6.5E+00						
PCB126	3.0E-01	U	2.3E-01	U	2.3E-01	U	2.5E-01	U	3.1E-01	U					
PCB128	3.1E+01	J-10	6.5E+00	J-10	4.4E+00	J-10	4.9E+00	J-10	5.1E+00	J-10					
PCB138	7.6E+01		8.6E+00		6.2E+00		7.5E+00		7.8E+00						
PCB153	2.5E+02	J-10	2.7E+01	J-10	1.8E+01	J-10	2.2E+01	J-10	2.3E+01	J-10					
PCB156	8.8E+00		8.4E-01		2.0E-01	U	8.7E-01		2.8E-01	U					
PCB157	2.4E-01	U	1.8E-01	U	1.8E-01	U	2.0E-01	U	2.5E-01	U					
PCB169	7.6E-01	U	5.6E-01	U	5.7E-01	U	6.2E-01	U	7.7E-01	U					
PCB170	3.4E+01		7.1E+00		3.7E+00		4.4E+00		5.1E+00						
PCB180	5.3E+01		1.0E+01		5.8E+00		5.6E+00		7.9E+00						
PCB189	3.5E-01	U	2.6E-01	U	2.6E-01	U	2.8E-01	U	3.5E-01	U					
PCB77	3.4E-01	U	2.5E-01	U	2.5E-01	U	2.7E-01	U	3.4E-01	U					
Total PCBs (calc)	1.4E+03		1.3E+02		7.8E+01		1.1E+02		1.1E+02						
Total PCTs	1.0E+02		2.6E+01		2.2E+01		1.5E+01		2.4E+01						

Table A-6. Results of analysis from sediments collected in the Weston study area (part of the East Subtidal region)

Analyte	01		02		03		04		05		06		07		08	
	ppb	Q														
PCB101	4.2E+02	J-10	3.5E+02	J-10	1.3E+03	J-10	9.6E+02	J-10	3.0E+02	J-10	3.3E+01	J-10	9.3E+01	J-10	1.6E+01	J-10
PCB105	5.3E+01		3.2E+01		1.1E+02		7.8E+01		1.2E+01		4.5E+00		1.2E+01		1.7E+00	
PCB110	2.0E+02		1.2E+02		4.1E+02		2.9E+02		5.5E+01		9.7E+00		3.9E+01		4.6E+00	
PCB118	1.4E+02		8.2E+01		2.8E+02		1.4E+02		2.3E+01		8.6E+00		2.9E+01		4.5E+00	U-7
PCB126	3.2E-01	U	3.8E-01	U	3.9E-01	U	4.8E-01	U	4.6E-01	U	4.3E-01	U	4.4E-01	U	2.9E-01	U
PCB128	6.7E+01	J-10	5.5E+01	J-10	1.8E+02	J-10	2.4E+02	J-10	5.5E+01	J-10	4.8E+00	U-7	1.5E+01	J-10	2.5E+00	J-10
PCB138	1.2E+02		9.9E+01		2.8E+02		2.0E+02		6.8E+01		7.7E+00		2.8E+01		3.7E+00	
PCB153	2.6E+02	J-10	2.6E+02	J-10	9.7E+02	J-10	6.6E+02	J-10	2.9E+02	J-10	2.5E+01	J-10	7.8E+01	J-10	1.3E+01	J-10
PCB156	1.3E+01		1.1E+01		3.2E+01		2.2E+01		1.8E+01		3.8E-01	U	3.2E+00		2.6E-01	U
PCB157	6.3E+00		4.9E+00		1.6E+01		3.5E+01		5.9E+00		3.4E-01	U	3.4E-01	U	2.3E-01	U
PCB169	8.0E-01	U	9.4E-01	U	8.9E-01	U	1.1E+00	U	1.0E+00	U	1.1E+00	U	1.1E+00	U	7.1E-01	U
PCB170	4.0E+01		1.1E+02		4.6E+02		3.6E+02		1.5E+02		5.6E+00		1.3E+01		2.9E+00	
PCB180	5.8E+01		1.6E+02		7.1E+02		5.8E+02		2.6E+02		7.9E+00		1.9E+01		4.9E+00	
PCB189	3.6E-01	U	1.3E+00		7.7E+00		1.1E+01		2.8E+00		4.8E-01	U	4.9E-01	U	3.2E-01	U
PCB77	3.6E-01	U	4.2E-01	U	2.3E+00		5.3E-01	U	5.0E-01	U	4.8E-01	U	4.9E-01	U	3.2E-01	U
Total PCBs (calc)	2.0E+03		1.7E+03		6.2E+03		4.6E+03		1.6E+03		1.2E+02		4.1E+02		6.0E+01	
Total PCTs	2.0E+02		7.0E+01		5.3E+02		7.7E+02		5.6E+01		1.3E+01		5.1E+01		5.1E+00	J-11

Table A-7. Results of analysis from sediments collected in the West Subtidal region

Analyte	01-01		01-02		02-01		02-02		03-01		03-02		03-03		03-03D		04-01	
	ppb	Q																
PCB101	4.3E+00	J-10	1.0E+01	J-10	NR		1.3E+01	J-10	3.3E+00	J-10	3.2E+00	J-10	9.3E+00	J-10	7.7E+00	J-10	6.5E+00	J-10
PCB105	1.5E+00	J-10	1.3E+00	J-10	2.1E-01	U	2.6E+00		2.2E+00		1.5E+00		1.2E+00		1.1E+00		5.3E-01	U-7
PCB110	1.3E+00		2.6E+00		2.1E-01	U	3.7E+00		1.7E+00		1.7E+00		2.4E+00		2.2E+00		1.8E+00	
PCB118	2.3E+00		2.8E+00		2.1E-01	U	4.5E+00		2.9E+00		2.3E+00		4.7E+00		3.7E+00		2.2E+00	
PCB126	1.5E-01	U	2.4E-01	U	2.3E-01	U	4.1E-01	U	2.4E-01	U	3.5E-01	U	3.4E-01	U	3.1E-01	U	2.2E-01	U
PCB128	6.7E-01	J-10	1.7E+00	J-10	2.3E-01	U	4.0E-01	U	NR		NR		NR		NR		4.8E+00	U-7
PCB138	1.1E+00		2.3E+00		6.7E-01		3.1E+00		1.4E+00		1.2E+00		2.4E+00		2.2E+00		1.7E+00	
PCB153	3.3E+00	J-10	7.3E+00	J-10	1.1E+00	J-10	8.9E+00	J-10	2.4E+00	J-10	NR		NR		5.2E+00	J-10	4.6E+00	J-10
PCB156	1.3E-01	U	2.1E-01	U	2.0E-01	U	3.6E-01	U	2.1E-01	U	3.0E-01	U	3.0E-01	U	2.7E-01	U	2.0E-01	U
PCB157	1.2E-01	U	1.9E-01	U	1.7E-01	U	3.0E-01	U	1.8E-01	U	2.6E-01	U	2.6E-01	U	2.3E-01	U	1.7E-01	U
PCB169	3.7E-01	U	6.0E-01	U	5.6E-01	U	9.8E-01	U	5.7E-01	U	8.4E-01	U	8.3E-01	U	7.5E-01	U	5.4E-01	U
PCB170	3.5E-01	J-11	1.2E+00		2.0E-01	U	1.0E+00		2.1E-01	U	3.0E-01	U	4.9E-01	J-11	3.4E-01	J-11	1.1E+00	
PCB180	1.3E+00		2.5E+00		1.9E-01	U	3.4E+00		1.4E+00		1.4E+00		2.5E+00		2.1E+00		2.0E+00	U-7
PCB189	1.7E-01	U	2.7E-01	U	2.5E-01	U	4.4E-01	U	2.6E-01	U	3.7E-01	U	3.7E-01	U	3.3E-01	U	2.4E-01	U
PCB77	1.6E-01	U	2.7E-01	U	2.5E-01	U	4.3E-01	U	2.5E-01	U	3.7E-01	U	3.7E-01	U	3.3E-01	U	2.4E-01	U
Total PCBs (calc)	1.7E+01		3.2E+01		1.1E+01		6.0E+01		2.6E+01		2.1E+01		3.9E+01		3.5E+01		2.3E+01	
Total PCTs	4.2E+00	J-11	7.9E+00	J-11	2.5E+00	U	7.5E+00	J-11	3.9E+00	J-11	3.1E+00	J-11	6.5E+00	J-11	5.9E+00	J-11	7.9E+00	J-11
Analyte	04-02		04-03-R		05-01-R		05-02-1		06-01		06-02		07-01-R		07-02		07-03	
	ppb	Q																
PCB101	3.3E+00	J-10	7.4E+00	J-10	1.4E+01	J-10	6.2E+00	J-10	1.4E+01	J-10	1.5E+01	J-10	1.8E+01	J-10	8.8E+00	J-10	7.1E+00	J-10
PCB105	2.3E-01	U	9.9E-01	U-7	1.5E+00	U-7	5.7E-01	U-7	1.9E+00	U-7	2.2E+00	U-7	3.0E+00		1.4E+00		1.1E+00	
PCB110	2.3E-01	U	1.8E+00		3.4E+00		1.7E+00		3.8E+00		3.6E+00		4.3E+00		3.0E+00		2.2E+00	
PCB118	1.1E+00		2.2E+00		3.7E+00		1.6E+00		4.5E+00		5.2E+00		5.7E+00		3.4E+00		3.2E+00	
PCB126	2.5E-01	U	2.4E-01	U	2.8E-01	U	2.3E-01	U	3.2E-01	U	3.0E-01	U	2.1E-01	U	2.5E-01	U	2.4E-01	U
PCB128	NR	NR	5.7E+00	U-7	4.1E+00	U-7	6.3E+00	U-7	6.5E+00	U-7	3.8E+00	U-7	3.8E+00	U-7	2.7E+00	U-7	2.0E+00	U-7
PCB138	7.3E-01		1.5E+00		3.0E+00		1.2E+00		3.3E+00		3.3E+00		3.9E+00		2.2E+00		1.8E+00	
PCB153	1.6E+00	U-7	4.9E+00	J-10	9.7E+00	J-10	4.1E+00	J-10	9.9E+00	J-10	9.2E+00	J-10	1.2E+01	J-10	5.8E+00	J-10	4.9E+00	J-10
PCB156	2.2E-01	U	2.2E-01	U	2.5E-01	U	2.0E-01	U	2.8E-01	U	2.7E-01	U	1.8E-01	U	2.2E-01	U	2.1E-01	U
PCB157	2.0E-01	U	1.9E-01	U	2.2E-01	U	1.8E-01	U	2.5E-01	U	2.4E-01	U	1.6E-01	U	1.9E-01	U	1.9E-01	U
PCB169	6.2E-01	U	6.0E-01	U	6.9E-01	U	5.5E-01	U	7.7E-01	U	7.4E-01	U	5.2E-01	U	6.2E-01	U	6.0E-01	U
PCB170	2.2E-01	U	9.1E-01		1.8E+00		7.9E-01		2.9E+00		2.7E-01	U	2.9E+00		1.1E+00		8.2E-01	
PCB180	2.0E-01	U	2.3E+00	U-7	3.4E+00		1.5E+00	U-7	4.1E+00		3.6E+00		4.3E+00		2.1E+00		1.9E+00	
PCB189	2.7E-01	U	2.7E-01	U	3.1E-01	U	2.5E-01	U	3.4E-01	U	3.3E-01	U	3.3E-01	U	2.3E-01	U	2.7E-01	U
PCB77	2.7E-01	U	2.7E-01	U	3.1E-01	U	2.4E-01	U	3.4E-01	U	3.3E-01	U	2.3E-01	U	2.7E-01	U	2.6E-01	U
Total PCBs (calc)	1.6E+01		2.9E+01		5.0E+01		2.1E+01		5.2E+01		5.4E+01		6.0E+01		4.0E+01		2.5E+01	
Total PCTs	2.6E+00	U	5.5E+00	J-11	7.2E+00	J-11	5.8E+00	J-11	1.0E+01		1.1E+01		1.0E+01		3.2E+00	U	6.4E+00	J-11

Table A-7. Results of analysis from sediments collected in the West Subtidal region, continued

Analyte	08-01		08-02		08-03		08-04		09-01		09-02		09-02D		10-01		10-02	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	6.8E+00	J-10	1.1E+01	J-10	1.6E+01	J-10	1.9E+01	J-10	2.2E+01	J-10	1.9E+03	J-10	2.1E+03	J-10	3.0E+01	J-10	2.1E+01	J-10
PCB105	1.9E+00		1.5E+00		2.5E+00		3.2E+00		9.2E-01	U-7	3.7E+01		3.8E+01		4.2E+00		4.2E+00	
PCB110	2.0E+00		2.9E+00		5.4E+00		5.1E+00		2.7E+00		2.4E+02		2.4E+02		8.8E+00		7.5E+00	
PCB118	3.3E+00		3.6E+00		6.1E+00		6.2E+00		2.7E+00		4.2E+01		4.7E+01		8.1E+00		6.8E+00	
PCB126	3.1E-01	U	2.5E-01	U	4.1E-01	U	4.1E-01	U	2.4E-01	U	2.2E-01	U	2.8E-01	U	3.5E-01	U	3.6E-01	U
PCB128	1.7E+00	U-7	2.2E+00	U-7	4.2E+00	U-7	3.5E+00	U-7	7.5E+00	U-7	3.4E+02	J-10	3.6E+02	J-10	8.3E+00	U-7	5.3E+00	U-7
PCB138	1.8E+00		2.7E+00		4.0E+00		4.2E+00		4.7E+00		5.1E+02		5.4E+02		6.9E+00		5.7E+00	
PCB153	5.0E+00	J-10	7.2E+00	J-10	1.2E+01	J-10	1.3E+01	J-10	1.8E+01	J-10	1.5E+03	J-10	1.6E+03	J-10	2.0E+01	J-10	1.5E+01	J-10
PCB156	2.7E-01	U	2.2E-01	U	3.6E-01	U	3.6E-01	U	2.2E-01	U	3.3E+01		3.4E+01		3.0E-01	U	2.0E+00	
PCB157	2.4E-01	U	2.0E-01	U	3.2E-01	U	3.2E-01	U	1.9E-01	U	5.2E+00		4.9E+00		2.7E-01	U	2.8E-01	U
PCB169	7.5E-01	U	6.2E-01	U	1.0E+00	U	1.0E+00	U	6.0E-01	U	5.5E-01	U	6.8E-01	U	8.4E-01	U	8.7E-01	U
PCB170	1.3E+00		2.0E+00		2.2E+00		3.0E+00		5.0E+00		5.4E+02		5.8E+02		4.8E+00	U-7	8.2E+00	U-7
PCB180	2.0E+00	U-7	2.5E+00	U-7	4.3E+00	U-7	4.2E+00	U-7	9.2E+00		9.3E+02		1.0E+03		7.0E+00		4.8E+00	
PCB189	3.4E-01	U	2.8E-01	U	4.6E-01	U	4.6E-01	U	2.7E-01	U	1.2E+01		1.1E+01		3.9E-01	U	4.0E-01	U
PCB77	3.4E-01	U	2.8E-01	U	4.5E-01	U	4.5E-01	U	2.7E-01	U	2.5E-01	U	3.0E-01	U	3.8E-01	U	3.9E-01	U
Total PCBs (calc)	3.0E+01		3.8E+01		6.7E+01		9.9E+01		8.0E+01		7.6E+03		8.1E+03		1.1E+02		9.8E+01	
Total PCTs	5.9E+00	J-11	8.2E+00		1.3E+01		1.1E+01		6.5E+00	J-11	1.6E+02		2.4E+02		1.3E+01		1.2E+01	
Analyte	10-03-R		10-04		10-05		10-06		10-07		10-08		11-01-R2		11-02		11-03-1	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	3.6E+01	J-10	4.5E+01	J-10	3.1E+01	J-10	4.7E+01	J-10	4.8E+01	J-10	3.1E+01	J-10	1.9E+01	J-10	3.3E+01	J-10	2.4E+01	J-10
PCB105	5.0E+00		5.6E+00		3.2E+00		6.4E+00		5.2E+00		2.5E+00		2.9E+00		3.2E+00		3.2E+00	
PCB110	9.8E+00		1.0E+01		6.4E+00		1.3E+01		1.3E+01		7.4E+00		5.0E+00		1.0E+01		5.8E+00	
PCB118	9.1E+00		8.5E+00		4.8E+00		1.0E+01		1.1E+01		5.2E+00		3.7E+00		7.5E+00		5.8E+00	
PCB126	7.1E-01	U	6.9E-01	U	7.6E-01	U	2.8E-01	U	5.0E-01	U	2.3E-01	U	5.0E-01	U	1.9E-01	U	4.7E-01	U
PCB128	6.1E+00	U-7	4.4E+00	U-7	3.2E+00	U-7	5.7E+00	J-10	6.9E+00	U-7	3.9E+00	U-7	1.5E+00	U-7	4.6E+00	J-10	3.8E+00	U-7
PCB138	8.7E+00		7.8E+00		5.1E+00		1.1E+01		1.0E+01		7.0E+00		3.3E+00		7.2E+00		3.9E+00	
PCB153	2.5E+01	J-10	2.9E+01	J-10	2.2E+01	J-10	3.2E+01	J-10	3.3E+01	J-10	2.1E+01	J-10	1.2E+01	J-10	2.2E+01	J-10	1.4E+01	J-10
PCB156	6.2E-01	U	6.1E-01	U	6.7E-01	U	1.0E+00		1.3E+00		7.2E-01		4.4E-01	U	7.2E-01		4.1E-01	U
PCB157	5.5E-01	U	5.5E-01	U	6.0E-01	U	6.7E-01		3.9E-01	U	1.8E-01	U	3.9E-01	U	1.5E-01	U	3.6E-01	U
PCB169	1.7E+00	U	1.7E+00	U	1.8E+00	U	6.8E-01	U	1.2E+00	U	5.7E-01	U	1.2E+00	U	4.6E-01	U	1.1E+00	U
PCB170	5.5E+00		1.4E+01	U-7	3.9E+00	U-7	6.6E+00		6.4E+00		4.4E+00		4.1E+00		4.3E+00		3.1E+00	
PCB180	6.7E+00		8.3E+00		4.0E+00		9.2E+00		1.1E+01		6.8E+00		2.6E+00		6.2E+00		3.9E+00	
PCB189	7.9E-01	U	7.7E-01	U	8.5E-01	U	3.1E-01	U	5.7E-01	U	2.6E-01	U	5.6E-01	U	2.1E-01	U	5.2E-01	U
PCB77	7.8E-01	U	7.6E-01	U	8.4E-01	U	3.0E-01	U	5.6E-01	U	2.5E-01	U	5.6E-01	U	2.1E-01	U	5.2E-01	U
Total PCBs (calc)	1.2E+02		1.1E+02		8.4E+01		1.6E+02		1.6E+02		1.1E+02		6.0E+01		1.2E+02		8.3E+01	
Total PCTs	1.8E+01		5.2E+01		1.5E+01		1.7E+01		2.1E+01		1.1E+01		7.2E+00	J-11	1.5E+01		1.7E+01	

Table A-7. Results of analysis from sediments collected in the West Subtidal region, continued

Analyte	12-01		12-02		13-01		13-02-R		13-03		14-01-2		14-02		15-01		15-02	
	ppb	Q																
PCB101	1.8E+01	J-10	1.2E+01	J-10	4.2E+01	J-10	2.7E+01	J-10	3.4E+01	J-10	8.0E+00	J-10	2.9E+01	J-10	3.2E+01	J-10	3.1E+01	J-10
PCB105	5.7E+00		1.3E+00		5.8E+00		3.4E+00		3.5E+00		1.5E+00		4.3E+00		3.8E+00		3.1E+00	
PCB110	4.3E+00		3.2E+00		1.4E+01		8.2E+00		8.0E+00		2.9E+00		6.9E+00		7.8E+00		7.7E+00	
PCB118	6.0E+00		2.6E+00		1.0E+01		6.8E+00		6.3E+00		2.3E+00		6.4E+00		6.9E+00		6.5E+00	
PCB126	2.3E-01	U	2.3E-01	U	1.9E-01	U	1.8E-01	U	2.2E-01	U	2.0E-01	U	2.2E-01	U	3.3E-01	U	2.9E-01	U
PCB128	2.8E+00	J-10	1.6E+00	U-7	5.4E+00	J-10	5.5E+00	J-10	4.7E+00	J-10	9.3E-01	J-10	4.0E+00	J-10	4.1E+00	J-10	3.6E+00	J-10
PCB138	3.5E+00		2.3E+00		9.8E+00		6.5E+00		6.5E+00		1.3E+00		6.0E+00		6.1E+00		6.2E+00	
PCB153	1.1E+01	J-10	7.4E+00	J-10	2.8E+01	J-10	1.8E+01	J-10	2.2E+01	J-10	7.8E+00	J-10	2.0E+01	J-10	2.0E+01	J-10	2.0E+01	J-10
PCB156	2.1E-01	U	2.1E-01	U	1.1E+00		5.8E-01		8.2E-01		1.7E-01	U	7.2E-01		9.0E-01		7.9E-01	
PCB157	1.8E-01	U	1.9E-01	U	1.5E-01	U	6.3E-01		1.7E-01	U	1.6E-01	U	1.7E-01	U	2.7E-01	U	2.3E-01	U
PCB169	5.8E-01	U	5.9E-01	U	4.8E-01	U	4.5E-01	U	5.4E-01	U	4.9E-01	U	5.4E-01	U	8.3E-01	U	7.1E-01	U
PCB170	2.1E+00		1.2E+00		3.8E+00		4.8E+00		4.7E+00		3.2E-01	J-11	4.0E+00		2.7E+00		3.2E+00	
PCB180	3.2E+00		2.1E+00		5.8E+00		7.7E+00		7.0E+00		1.3E+00	U-7	7.0E+00		5.4E+00		6.9E+00	
PCB189	2.6E-01	U	2.7E-01	U	2.2E-01	U	2.1E-01	U	2.5E-01	U	2.2E-01	U	2.5E-01	U	3.8E-01	U	3.3E-01	U
PCB77	2.6E-01	U	2.6E-01	U	2.1E-01	U	2.0E-01	U	2.4E-01	U	2.2E-01	U	2.4E-01	U	3.7E-01	U	3.2E-01	U
Total PCBs (calc)	6.3E+01		3.5E+01		1.5E+02		8.3E+01		1.0E+02		3.8E+01		1.0E+02		1.1E+02		1.1E+02	
Total PCTs	6.3E+00	J-11	6.1E+00	J-11	1.1E+01		3.7E+01		2.7E+01		4.9E+00	J-11	8.6E+00		1.0E+01		1.5E+01	
Analyte	15-03		16-01		16-02-1		17-01		17-02		18-01		18-02		18-03		18-03D	
	ppb	Q																
PCB101	4.2E+01	J-10	3.2E+01	J-10	1.8E+01	J-10	3.3E+01	J-10	6.6E+01	J-10	2.0E+01	J-10	2.2E+01	J-10	2.6E+01	J-10	2.5E+01	J-10
PCB105	4.6E+00		4.0E+00		2.6E-01	U	4.3E+00		8.4E+00		2.3E+00		2.4E+00		3.8E+00		2.8E+00	
PCB110	1.1E+01		7.2E+00		2.9E+00		8.7E+00		2.0E+01		4.7E+00		5.0E+00		6.5E+00		5.9E+00	
PCB118	9.0E+00		7.6E+00		2.4E+00		8.5E+00		1.5E+01		4.3E+00		4.7E+00		6.4E+00		4.6E+00	
PCB126	3.0E-01	U	3.6E-01	U	2.8E-01	U	2.9E-01	U	4.1E-01	U	2.5E-01	U	2.2E-01	U	3.4E-01	U	3.1E-01	U
PCB128	6.3E+00	J-10	4.6E+00	U-7	2.4E+00	U-7	4.4E+00	U-7	8.5E+00	J-10	3.7E+00	J-10	3.1E+00	J-10	3.8E+00	J-10	3.8E+00	J-10
PCB138	7.9E+00		6.4E+00		2.8E+00		7.8E+00		1.5E+01		4.5E+00		4.8E+00		6.1E+00		5.6E+00	
PCB153	2.6E+01	J-10	2.1E+01	J-10	1.1E+01	J-10	2.3E+01	J-10	4.9E+01	J-10	1.4E+01	J-10	1.5E+01	J-10	1.9E+01	J-10	1.8E+01	J-10
PCB156	1.4E+00		3.2E-01	U	2.5E-01	U	2.6E-01	U	1.4E+00		6.5E-01		5.4E-01		1.0E+00		9.8E-01	
PCB157	8.2E-01		2.9E-01	U	2.2E-01	U	2.3E-01	U	3.2E-01	U	2.0E-01	U	1.7E-01	U	2.7E-01	U	2.5E-01	U
PCB169	7.5E-01	U	8.9E-01	U	6.9E-01	U	7.3E-01	U	1.0E+00	U	6.1E-01	U	5.3E-01	U	8.5E-01	U	7.7E-01	U
PCB170	5.2E+00		4.6E+00		3.6E+00		4.8E+00		8.8E+00		3.1E+00		3.3E+00		2.9E+00		3.2E+00	
PCB180	9.2E+00		6.5E+00		6.0E+00		6.8E+00		1.3E+01		4.9E+00		5.1E+00		6.2E+00		6.1E+00	
PCB189	3.4E-01	U	4.1E-01	U	3.2E-01	U	3.3E-01	U	4.6E-01	U	2.8E-01	U	2.4E-01	U	3.9E-01	U	3.5E-01	U
PCB77	3.4E-01	U	4.0E-01	U	3.1E-01	U	3.3E-01	U	4.5E-01	U	2.7E-01	U	2.4E-01	U	3.8E-01	U	3.4E-01	U
Total PCBs (calc)	1.4E+02		1.1E+02		5.6E+01		1.4E+02		2.6E+02		6.5E+01		7.2E+01		8.8E+01		6.7E+01	
Total PCTs	3.2E+01		1.0E+01		5.1E+00	J-11	1.4E+01		3.0E+01		1.3E+01		1.2E+01		1.2E+01		2.3E+01	

Table A-7. Results of analysis from sediments collected in the West Subtidal region, continued

Analyte	18-04		18-05		19-01-R		19-02		19-02D		19-02T		19-03		19-04		19-05	
	ppb	Q																
PCB101	3.3E+01	J-10	3.6E+01	J-10	3.6E+01	J-10	2.4E+01	J-10	3.0E+01	J-10	2.6E+01	J-10	5.7E+01	J-10	2.3E+01	J-10	2.7E+01	J-10
PCB105	3.5E+00		7.2E+00		3.3E+00		3.3E+00		3.7E+00		3.2E+00		6.6E+00		2.2E+00		3.3E+00	
PCB110	7.0E+00		9.3E+00		8.7E+00		5.7E+00		7.9E+00		6.9E+00		1.6E+01		5.0E+00		6.3E+00	
PCB118	5.8E+00		1.0E+01		7.8E+00		4.9E+00		6.6E+00		5.6E+00		1.4E+01		4.2E+00		6.1E+00	
PCB126	3.4E-01	U	2.8E-01	U	2.6E-01	U	2.2E-01	U	2.1E-01	U	2.5E-01	U	3.0E-01	U	3.2E-01	U	2.7E-01	U
PCB128	2.2E+00	J-10	5.4E+00	J-10	5.2E+00	J-10	3.9E+00	J-10	4.2E+00	J-10	4.2E+00	J-10	8.9E+00	J-10	1.8E+00	J-10	4.3E+00	J-10
PCB138	5.4E+00		7.5E+00		8.8E+00		5.8E+00		7.1E+00		6.9E+00		1.5E+01		4.2E+00		6.4E+00	
PCB153	2.3E+01	J-10	2.4E+01	J-10	2.7E+01	J-10	1.9E+01	J-10	2.3E+01	J-10	2.1E+01	J-10	4.2E+01	J-10	1.7E+01	J-10	2.0E+01	J-10
PCB156	7.8E-01		9.5E-01		8.6E-01		5.9E-01		8.0E-01		4.9E-01		1.3E+00		2.8E-01	U	5.3E-01	
PCB157	2.7E-01	U	2.2E-01	U	6.3E-01		5.3E-01		6.1E-01		6.3E-01		1.1E+00		2.5E-01	U	2.1E-01	U
PCB169	8.4E-01	U	7.0E-01	U	6.4E-01	U	5.5E-01	U	5.2E-01	U	6.1E-01	U	7.4E-01	U	7.8E-01	U	6.6E-01	U
PCB170	3.4E+00		4.2E+00		6.8E+00		4.4E+00		4.8E+00		4.5E+00		9.9E+00		4.3E+00		5.0E+00	
PCB180	4.7E+00		7.6E+00		9.5E+00		5.8E+00		6.5E+00		6.3E+00		1.2E+01		4.4E+00		7.9E+00	
PCB189	3.8E-01	U	3.2E-01	U	2.9E-01	U	2.5E-01	U	2.4E-01	U	2.8E-01	U	3.4E-01	U	3.5E-01	U	3.0E-01	U
PCB77	3.7E-01	U	3.1E-01	U	2.8E-01	U	2.4E-01	U	2.3E-01	U	2.7E-01	U	3.3E-01	U	3.5E-01	U	2.9E-01	U
Total PCBs (calc)	1.2E+02		1.4E+02		1.2E+02		9.4E+01		1.0E+02		9.5E+01		1.9E+02		6.4E+01		8.8E+01	
Total PCTs	1.5E+01		1.4E+01		2.0E+01		1.6E+01		1.9E+01		1.5E+01		3.9E+01		1.6E+01		1.2E+01	
Analyte	19-06		20-01		20-02		20-03		20-03D		21-01		21-02		21-03		22-01	
	ppb	Q																
PCB101	2.5E+01	J-10	2.2E+01	J-10	9.2E+00	J-10	2.2E+01	J-10	3.0E+01	J-10	8.3E+01	J-10	3.7E+01	J-10	3.4E+01	J-10	2.1E+01	J-10
PCB105	3.4E+00		2.0E+00		8.1E-01		2.7E+00		3.3E+00		5.3E+00		6.0E+00		2.9E+00		2.6E+00	
PCB110	5.3E+00		5.7E+00		2.3E+00		5.2E+00		8.3E+00		1.1E+01		8.1E+00		8.2E+00		5.2E+00	
PCB118	4.7E+00		4.5E+00		2.0E+00		5.1E+00		6.8E+00		6.1E+00		7.8E+00		6.6E+00		5.0E+00	
PCB126	2.4E-01	U	1.9E-01	U	1.7E-01	U	2.1E-01	U	2.3E-01	U	3.7E-01	U	3.7E-01	U	3.1E-01	U	3.2E-01	U
PCB128	2.0E+00	J-10	3.5E+00	J-10	1.7E+00	J-10	3.3E+00	J-10	4.4E+00	J-10	1.2E+01	J-10	5.9E+00	U-7	5.2E+00	J-10	3.3E+00	U-7
PCB138	4.6E+00		5.5E+00		2.3E+00		4.9E+00		7.2E+00		2.0E+01		1.0E+01		8.9E+00		5.5E+00	
PCB153	1.8E+01	J-10	1.6E+01	J-10	6.8E+00	J-10	1.6E+01	J-10	2.2E+01	J-10	6.7E+01	J-10	3.0E+01	J-10	2.9E+01	J-10	1.6E+01	J-10
PCB156	4.8E-01	J-11	5.3E-01		1.5E-01	U	1.9E-01	U	6.9E-01		1.5E+00		3.3E-01	U	9.6E-01		5.0E-01	
PCB157	1.9E-01	U	5.6E-01		1.4E-01	U	1.7E-01	U	5.4E-01		2.9E-01	U	3.0E-01	U	2.4E-01	U	2.6E-01	U
PCB169	5.9E-01	U	4.7E-01	U	4.3E-01	U	5.3E-01	U	5.6E-01	U	9.1E-01	U	9.4E-01	U	7.6E-01	U	8.1E-01	U
PCB170	4.1E+00		3.4E+00		1.2E+00		3.8E+00		4.7E+00		1.8E+01		7.6E+00		7.4E+00		2.6E+00	
PCB180	3.9E+00		5.4E+00		2.9E+00		6.1E+00		6.6E+00		2.6E+01		9.7E+00		1.0E+01		4.9E+00	
PCB189	2.7E-01	U	2.1E-01	U	2.0E-01	U	2.4E-01	U	2.6E-01	U	4.1E-01	U	4.2E-01	U	3.5E-01	U	3.6E-01	U
PCB77	2.6E-01	U	2.1E-01	U	1.9E-01	U	2.4E-01	U	2.5E-01	U	4.0E-01	U	4.1E-01	U	3.4E-01	U	3.6E-01	U
Total PCBs (calc)	7.8E+01		7.2E+01		2.9E+01		7.3E+01		1.0E+02		3.0E+02		1.5E+02		1.2E+02		7.4E+01	
Total PCTs	1.2E+01		1.5E+01		5.1E+00	J-11	1.2E+01		1.6E+01		1.3E+01		1.5E+01		2.1E+01		1.3E+01	

Table A-7. Results of analysis from sediments collected in the West Subtidal region, continued

Table A-8. Results of analysis from sediments collected in the West Intertidal region

Analyte	01-01		01-02		01-03		01-04		01-05		02-01		02-02		03-01		03-02	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	1.5E+00	J-10	1.2E+01	J-10	1.3E+00	U-7	2.3E+01	J-10	6.5E-01	U-7	5.0E-01	U	3.9E+00	J-10	1.0E+01	J-10	2.9E+00	J-10
PCB105	3.5E-01	U	3.2E+00	J-10	2.5E-01	U	4.3E+00	J-10	1.3E-01	U	5.2E-01	U	2.4E-01	U	1.4E+00	J-10	7.0E-01	J-10
PCB110	3.5E-01	U	5.8E+00		4.8E-01	U-7	1.2E+01		1.3E-01	U	5.2E-01	U	1.5E+00		3.6E+00		1.4E+00	
PCB118	3.4E-01	U	5.5E+00		1.5E+00	U-7	9.3E+00		1.2E-01	U	8.3E+00	U-7	5.6E+00	U-7	4.4E+00	U-7	2.3E-01	U
PCB126	3.9E-01	U	4.5E-01	U	2.7E-01	U	3.3E-01	U	1.4E-01	U	5.5E-01	U	2.5E-01	U	2.5E-01	U	2.5E-01	U
PCB128	3.7E-01	U	1.4E+00	J-10	2.6E-01	U	4.9E+00	J-10	1.4E-01	U	5.4E-01	U	7.9E-01	J-10	9.5E-01	J-10	2.4E-01	U
PCB138	3.6E-01	U	3.7E+00		2.6E-01	U	9.6E+00		1.3E-01	U	5.4E-01	U	2.4E-01	U	2.5E+00		1.0E+00	
PCB153	3.4E-01	U	9.7E+00	J-10	2.4E-01	U	1.9E+01	J-10	1.3E-01	U	5.2E-01	U	2.7E+00	J-10	7.3E+00	J-10	2.3E+00	J-10
PCB156	3.4E-01	U	3.9E-01	U	2.4E-01	U	2.9E-01	U	1.2E-01	U	4.9E-01	U	2.2E-01	U	2.2E-01	U	2.2E-01	U
PCB157	3.0E-01	U	3.5E-01	U	2.1E-01	U	2.5E-01	U	1.1E-01	U	4.5E-01	U	2.0E-01	U	2.0E-01	U	2.0E-01	U
PCB169	9.5E-01	U	1.1E+00	U	6.7E-01	U	8.1E-01	U	3.5E-01	U	1.4E+00	U	6.3E-01	U	6.2E-01	U	6.2E-01	U
PCB170	3.3E-01	U	9.0E-01		2.4E-01	U	3.8E+00		1.2E-01	U	4.9E-01	U	2.2E-01	U	2.2E-01	U	9.7E-01	
PCB180	3.1E-01	U	3.6E-01	U	2.2E-01	U	3.6E+00		1.1E-01	U	4.6E-01	U	2.1E-01	U	1.5E+00		1.9E+00	
PCB189	4.2E-01	U	4.9E-01	U	3.0E-01	U	3.6E-01	U	1.5E-01	U	6.3E-01	U	2.9E-01	U	2.8E-01	U	2.9E-01	U
PCB77	4.2E-01	U	4.9E-01	U	3.0E-01	U	3.6E-01	U	1.5E-01	U	6.2E-01	U	2.8E-01	U	2.8E-01	U	2.8E-01	U
Total PCBs (calc)	3.6E+00		4.6E+01		1.1E+01		9.6E+01		3.4E+00		7.0E+00		1.9E+01		3.4E+01		1.6E+01	
Total PCTs	5.3E+00	J-11	9.0E+00		4.3E+00	U	1.4E+01		3.9E+00	J-11	2.8E+01		1.1E+01		8.1E+00	J-11	3.9E+00	J-11
Analyte	03-03		03-04		03-04D		03-05		03-06		04-01		04-02		05-01		05-02	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q	ppb	Q
PCB101	2.3E+00	J-10	1.2E+01	J-10	1.3E+01	J-10	1.3E+00	J-10	7.2E+00	J-10	2.4E+00	J-10	1.1E+01	J-10	7.1E+01	J-10	1.1E+01	J-10
PCB105	4.1E-01	J-10,11	1.6E+00	J-10	1.6E+00	J-10	4.2E-01	U	7.0E-01		2.3E-01	U	1.8E+00	J-10	8.4E+00		1.1E+00	
PCB110	1.2E+00		3.9E+00		4.6E+00		4.2E-01	U	2.5E+00		9.4E-01		3.1E+00		2.8E+01		3.8E+00	
PCB118	1.9E-01	U	4.8E+00	U-7	4.0E+00	U-7	4.1E-01	U	3.5E+00		2.3E+00		2.9E+00		2.0E+01		3.0E+00	
PCB126	2.1E-01	U	1.8E-01	U	1.4E-01	U	4.5E-01	U	2.5E-01	U	2.6E-01	U	1.5E-01	U	3.1E-01	U	2.9E-01	U
PCB128	2.1E-01	U	6.3E+00	J-10	7.0E+00	J-10	4.4E-01	U	2.4E+00	U-7	2.9E+00	J-10	2.3E+00	J-10	1.3E+01	U-7	5.2E+00	U-7
PCB138	1.2E+00		5.4E+00		5.6E+00		4.4E-01	U	2.4E+00		7.5E-01		2.5E+00		1.5E+01		1.7E+00	
PCB153	1.3E+00	J-10	1.1E+01	J-10	1.3E+01	J-10	4.2E-01	U	5.0E+00	J-10	1.9E+00	J-10	7.4E+00	J-10	5.6E+01	J-10	7.6E+00	J-10
PCB156	1.9E-01	U	8.0E-01		6.5E-01		4.1E-01	U	2.2E-01	U	2.3E-01	U	1.3E-01	U	1.4E+00		2.5E-01	U
PCB157	1.7E-01	U	8.5E-01		9.8E-01		3.7E-01	U	1.9E-01	U	2.0E-01	U	1.2E-01	U	2.3E-01	U	2.1E-01	U
PCB169	5.3E-01	U	4.5E-01	U	3.4E-01	U	1.1E+00	U	6.2E-01	U	6.4E-01	U	3.7E-01	U	7.4E-01	U	6.9E-01	U
PCB170	5.0E-01	J-11	5.1E+00		5.9E+00		4.0E-01	U	3.5E-01	J-11	2.3E-01	U	1.4E+00		5.1E+00		2.5E-01	
PCB180	1.0E+00		8.5E+00		9.9E+00		3.8E-01	U	9.5E-01		2.1E-01	U	2.8E+00		8.6E+00		9.5E-01	U-7
PCB189	2.4E-01	U	2.1E-01	U	1.6E-01	U	5.2E-01	U	2.8E-01	U	2.9E-01	U	1.7E-01	U	3.3E-01	U	3.1E-01	U
PCB77	2.4E-01	U	2.1E-01	U	1.6E-01	U	5.1E-01	U	2.7E-01	U	2.8E-01	U	1.7E-01	U	3.3E-01	U	3.1E-01	U
Total PCBs (calc)	8.7E+00		4.3E+01		4.3E+01		6.1E+00		2.5E+01		1.3E+01		4.6E+01		3.4E+02		5.1E+01	
Total PCTs	4.3E+00	J-11	3.2E+01		3.7E+01		3.0E+00	J-11	6.3E+00	J-11	5.7E+00	J-11	2.9E+00	U	1.8E+01		2.2E+00	J-11

Table A-8. Results of analysis from sediments collected in the West Intertidal region, continued

Analyte	05-03		05-04		06-01		06-02		06-03		07-01		07-01D		07-02		07-03	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	3.6E+00	J-10	1.2E+00	J-10	4.6E+00	J-10	1.0E+01	J-10	9.8E+00	J-10	5.8E+02	J-10	6.7E+02	J-10	1.4E+02	J-10	1.7E+00	J-10
PCB105	2.7E-01	U	2.9E-01	U	7.9E-01		9.5E-01		1.8E+00		8.9E+00		1.1E+01		4.6E+00		3.8E-01	J-11
PCB110	1.2E+00	U-7	2.9E-01	U	1.7E+00		3.3E+00		3.8E+00		6.1E+01		7.4E+01		1.9E+01		8.8E-01	
PCB118	1.6E+00	U-7	2.8E-01	U	1.6E+00		1.8E+00		3.4E+00		9.0E+00		9.7E+00		6.8E+00		7.3E-01	J-11
PCB126	3.0E-01	U	3.2E-01	U	2.5E-01	U	1.6E-01	U	2.0E-01	U	2.1E-01	U	1.7E-01	U	2.3E-01	U	1.8E-01	U
PCB128	5.7E+00	U-7	3.1E-01	U	1.7E+00	U-7	2.9E+00	U-7	1.0E+00	U-7	9.5E+01	J-10	1.2E+02	J-10	2.5E+01	J-10	1.1E+00	U-7
PCB138	5.1E-01		3.0E-01	U	1.4E+00		2.7E+00		2.1E+00		1.5E+02		1.8E+02		3.7E+01		8.6E-01	
PCB153	2.5E+00	J-10	2.9E-01	U	3.1E+00	J-10	5.8E+00	J-10	8.9E+00	J-10	4.8E+02	J-10	5.7E+02	J-10	1.1E+02	J-10	1.2E+00	J-10
PCB156	2.6E-01	U	2.8E-01	U	2.2E-01	U	1.4E-01	U	1.8E-01	U	9.0E+00		1.2E+01		2.8E+00		1.5E-01	U
PCB157	2.2E-01	U	2.4E-01	U	1.9E-01	U	1.2E-01	U	1.6E-01	U	3.5E+00		3.9E+00		1.8E-01	U	1.4E-01	U
PCB169	7.2E-01	U	7.6E-01	U	6.2E-01	U	3.9E-01	U	5.0E-01	U	5.1E-01	U	4.1E-01	U	5.6E-01	U	4.4E-01	U
PCB170	2.6E-01	U	2.7E-01	U	1.1E+00		1.2E+00		3.9E-01	J-11	1.8E+02		2.0E+02		3.8E+01		1.6E-01	U
PCB180	2.4E-01	U	2.6E-01	U	1.0E+00		1.8E+00		2.3E+00		2.9E+02		3.3E+02		6.4E+01		1.5E-01	U
PCB189	3.2E-01	U	3.4E-01	U	2.8E-01	U	1.7E-01	U	2.2E-01	U	3.9E+00		4.3E+00		7.8E-01	J-11	1.9E-01	U
PCB77	3.2E-01	U	3.4E-01	U	2.7E-01	U	1.7E-01	U	2.2E-01	U	2.3E-01	U	1.9E-01	U	2.5E-01	U	1.9E-01	U
Total PCBs (calc)	1.6E+01		1.1E+01		1.7E+01		3.2E+01		4.9E+01		2.4E+03		2.8E+03		5.5E+02		7.1E+00	
Total PCTs	2.6E+00	J-11	2.9E+00	U	2.8E+00	J-11	5.0E+00	J-11	4.5E+00	U	5.6E+00	J-11	5.5E+00	J-11	6.2E+00	J-11	2.6E+00	U
Analyte	08-01		08-02		08-03		08-04		08-05		08-06		09-01-R5		09-02		10-01	
	ppb	Q	ppb	Q	ppb	Q	ppb	Q										
PCB101	1.2E+01	J-10	2.8E+01	J-10	NR		1.4E+01	J-10	2.0E+01	J-10	1.5E+01	J-10	5.6E+01	J-10	3.9E+01	J-10	1.7E+01	J-10
PCB105	4.6E-01	J-11	2.5E+00		2.4E-01	U	2.3E+00		1.9E+00		1.6E+00		7.5E+00		1.1E+00		1.4E+00	
PCB110	2.9E+00		5.1E+00		2.4E-01	U	3.7E+00		4.2E+00		2.6E+00		2.1E+01		1.1E+01		4.3E+00	
PCB118	2.1E+00		3.7E+00		2.3E-01	U	2.9E+00		3.7E+00		2.0E+00		1.6E+01		1.9E+00		2.7E+00	
PCB126	3.1E-01	U	3.7E-01	U	2.6E-01	U	4.1E-01	U	4.5E-01	U	2.9E-01	U	1.8E-01	U	1.3E-01	U	1.3E-01	U
PCB128	4.0E+00	U-7	7.3E+00	U-7	2.6E-01	U	3.9E+00	U-7	5.0E+00	U-7	4.1E+00	U-7	7.3E+00	J-10	8.0E+00	J-10	2.2E+00	J-10
PCB138	3.1E+00		7.4E+00		2.5E-01	U	4.0E+00		4.9E+00		3.9E+00		1.4E+01		1.1E+01		3.7E+00	
PCB153	8.0E+00	J-10	2.1E+01	J-10	NR		1.1E+01	J-10	1.5E+01	J-10	1.1E+01	J-10	3.7E+01	J-10	2.2E+01	J-10	1.0E+01	J-10
PCB156	2.8E-01	U	3.3E-01	U	2.3E-01	U	3.6E-01	U	4.0E-01	U	2.6E-01	U	1.5E+00		3.3E-01	J-11	3.6E-01	J-11
PCB157	2.5E-01	U	2.9E-01	U	2.1E-01	U	3.3E-01	U	3.6E-01	U	2.3E-01	U	1.5E-01	U	4.4E-01		1.0E-01	U
PCB169	7.6E-01	U	9.0E-01	U	6.4E-01	U	1.0E+00	U	1.1E+00	U	7.2E-01	U	4.6E-01	U	3.2E-01	U	3.2E-01	U
PCB170	1.9E+00	U-7	1.2E+01	U-7	2.0E+00	U-7	5.0E+00	U-7	9.6E+00	U-7	4.1E+00	U-7	4.2E+00		5.4E+00		1.9E+00	
PCB180	3.5E+00		1.4E+01		2.1E-01	U	4.7E+00		9.7E+00		5.1E+00		6.8E+00		8.3E+00		2.8E+00	
PCB189	3.5E-01	U	4.1E-01	U	2.9E-01	U	4.6E-01	U	5.0E-01	U	3.3E-01	U	2.1E-01	U	1.4E-01	U	1.4E-01	U
PCB77	3.5E-01	U	4.1E-01	U	2.9E-01	U	4.6E-01	U	5.0E-01	U	3.3E-01	U	2.0E-01	U	1.4E-01	U	1.4E-01	U
Total PCBs (calc)	3.7E+01		1.0E+02		2.4E+01		5.7E+01		7.0E+01		6.4E+01		2.0E+02		1.2E+02		5.1E+01	
Total PCTs	7.1E+00	J-11	1.8E+01		3.0E+00	U	8.8E+00		3.0E+01		7.6E+00	J-11	2.1E+01		1.0E+01		1.0E+01	

Table A-8. Results of analysis from sediments collected in the West Intertidal region, continued

Analyte	10-01D		10-02		11-01		11-02		12-01-R		12-02		12-02D		12-02T		12-03	
	ppb	Q																
PCB101	1.8E+01	J-10	2.3E+01	J-10	7.0E+02	J-10	1.8E+00	J-10	2.1E+02	J-10	9.6E+01	J-10	9.2E+01	J-10	9.1E+01	J-10	1.8E+02	J-10
PCB105	1.6E+00		1.6E+00		7.3E+01		2.5E-01	J-11	2.4E+01		1.1E+01		1.1E+01		9.9E+00		1.7E+01	
PCB110	4.5E+00		7.1E+00		2.4E+02		6.4E-01	J-11	6.4E+01		3.0E+01		2.8E+01		2.8E+01		5.0E+01	
PCB118	2.9E+00		2.9E+00		1.4E+02		8.5E-01		4.4E+01		2.5E+01		2.2E+01		1.9E+01		3.2E+01	
PCB126	1.3E-01	U	1.7E-01	U	6.5E-01		2.4E-01	U	2.4E-01	U	3.5E-01	U	3.1E-01	U	2.8E-01	U	3.2E-01	U
PCB128	2.5E+00	J-10	4.7E+00	J-10	4.7E+01	J-10	2.8E+00	J-10	2.5E+01	J-10	1.1E+01	J-10	1.1E+01	J-10	1.3E+01	J-10	2.2E+01	J-10
PCB138	3.6E+00		5.8E+00		9.0E+01		6.5E-01		5.2E+01		2.3E+01		2.2E+01		2.1E+01		3.9E+01	
PCB153	1.0E+01	J-10	1.2E+01	J-10	7.2E+02	J-10	1.4E+00	J-10	1.4E+02	J-10	6.4E+01	J-10	6.1E+01	J-10	6.2E+01	J-10	1.2E+02	J-10
PCB156	3.4E-01	J-11	4.2E-01	J-11	9.8E+00		2.1E-01	U	4.9E+00		2.6E+00		2.3E+00		2.2E+00		4.2E+00	
PCB157	1.1E-01	U	1.4E-01	U	9.5E+00		1.9E-01	U	4.0E+00		1.7E+00		1.4E+00		1.3E+00		2.4E+00	
PCB169	3.4E-01	U	4.3E-01	U	4.7E-01	U	5.9E-01	U	5.8E-01	U	8.5E-01	U	7.7E-01	U	7.0E-01	U	7.8E-01	U
PCB170	2.1E+00		3.2E+00		6.0E+01		2.1E-01	U	2.4E+01		1.1E+01		9.9E+00		9.0E+00		2.0E+01	
PCB180	2.9E+00		3.8E+00		1.1E+02		8.9E-01	U-7	3.6E+01		1.6E+01		1.4E+01		1.4E+01		3.0E+01	
PCB189	1.5E-01	U	2.0E-01	U	2.0E+00		2.7E-01	U	2.7E-01	U	3.9E-01	U	3.5E-01	U	3.2E-01	U	3.5E-01	U
PCB77	1.5E-01	U	1.9E-01	U	2.6E+01		2.6E-01	U	2.6E-01	U	3.8E-01	U	3.4E-01	U	3.1E-01	U	3.5E-01	U
Total PCBs (calc)	5.3E+01		5.8E+01		5.2E+03		1.1E+01		7.7E+02		3.3E+02		3.2E+02		3.2E+02		6.6E+02	
Total PCTs	8.3E+00		2.8E+01		1.5E+02		2.0E+00	U	4.3E+01		4.1E+01		3.1E+01		2.8E+01		3.5E+01	
Analyte	12-04		12-05		12-06		12-07		12-08		13-01		13-02		13-03		13-04	
	ppb	Q																
PCB101	3.8E+01	J-10	8.7E+01	J-10	3.7E+00	J-10	1.5E+02	J-10	7.2E+01	J-10	8.5E+00	J-10	1.5E+00	U-7	4.0E-01	U-7	1.0E+00	U-7
PCB105	5.5E+00		7.3E+00		4.2E-01	J-11	4.6E+01		8.0E+00		4.4E-01	J-11	1.9E-01	U	1.9E-01	U	1.5E-01	U
PCB110	1.4E+01		3.5E+01		1.0E+00		1.3E+02		2.2E+01		1.9E+00		4.5E-01	J-11	2.5E-01	J-11	3.2E-01	J-11
PCB118	9.5E+00		1.8E+01		6.0E-01	J-11	9.9E+01		1.7E+01		1.6E+00		1.9E-01	U	1.8E-01	U	1.5E-01	U
PCB126	2.0E-01	U	2.6E-01	U	2.6E-01	U	2.0E-01	U	1.7E-01	U	2.4E-01	U	2.1E-01	U	2.1E-01	U	1.7E-01	U
PCB128	4.4E+00	J-10	1.8E+01	J-10	6.5E-01	J-10	8.8E+01	J-10	8.0E+00	J-10	1.3E+00	J-10	2.1E-01	U	2.0E-01	U	1.7E-01	U
PCB138	6.5E+00		3.1E+01		6.1E-01		6.1E+01		1.6E+01		1.7E+00		3.7E-01	J-11	2.1E-01	J-11	2.8E-01	J-11
PCB153	3.5E+01	J-10	6.8E+01	J-10	2.3E+00	J-10	1.0E+02	J-10	4.4E+01	J-10	7.5E+00	J-10	2.3E+00	U-7	1.5E+00	U-7	1.6E+00	U-7
PCB156	8.8E-01		2.1E+00		2.3E-01	U	1.6E+01		1.8E+00		2.1E-01	U	1.9E-01	U	1.8E-01	U	1.5E-01	U
PCB157	5.6E-01		2.2E+00		2.0E-01	U	2.2E+01		1.1E+00		1.9E-01	U	1.7E-01	U	1.6E-01	U	1.3E-01	U
PCB169	5.0E-01	U	6.3E-01	U	6.3E-01	U	5.0E-01	U	4.2E-01	U	5.8E-01	U	5.3E-01	U	5.1E-01	U	4.2E-01	U
PCB170	3.3E+00		1.4E+01		6.1E-01		7.4E+01		6.6E+00		3.0E+00		2.5E-01	J-11	1.8E-01	U	1.5E-01	U
PCB180	4.5E+00		1.9E+01		5.4E-01		3.6E+01		9.6E+00		5.1E+00		2.8E-01	U-7	2.7E-01	U-7	4.0E-01	U-7
PCB189	2.3E-01	U	2.9E-01	U	2.9E-01	U	8.7E+00		1.9E-01	U	2.7E-01	U	2.4E-01	U	2.3E-01	U	1.9E-01	U
PCB77	1.3E+00		2.8E-01	U	2.8E-01	U	2.2E-01	U	9.3E-01		2.6E-01		2.4E-01	U	2.3E-01	U	1.9E-01	U
Total PCBs (calc)	2.1E+02		3.4E+02		7.6E+00		5.4E+02		2.3E+02		3.7E+01		1.1E+01		6.0E+00		9.1E+00	
Total PCTs	1.7E+01		3.2E+01		3.4E+00	J-11	7.6E+02		2.7E+01		5.2E+00	J-11	3.8E+00	U	3.3E+00	U	2.0E+00	U

Table A-8. Results of analysis from sediments collected in the West Intertidal region, continued

Analyte	13-05		13-06		14-01		14-02								
	ppb	Q	ppb	Q	ppb	Q	ppb	Q							
PCB101	4.3E+00	J-10	1.1E+00	U-7	1.6E+00	J-10	4.1E-01	J-10							
PCB105	6.1E-01		1.6E-01	U	2.0E-01	U	3.5E-01	J-11							
PCB110	1.1E+00		3.5E-01	J-11	6.0E-01	J-11	2.2E-01	J-11							
PCB118	3.5E-01	U	1.6E-01	U	2.0E-01	U	4.2E-01	J-11							
PCB126	4.1E-01	U	1.8E-01	U	2.2E-01	U	1.0E-01	U							
PCB128	4.1E-01	U	1.8E-01	U	2.2E-01	U	1.3E+00	U-7							
PCB138	8.5E-01		2.7E-01	J-11	3.9E-01	J-11	3.0E-01	J-11							
PCB153	4.4E+00	U-7	1.4E+00	U-7	9.6E-01	U-7	3.7E-01	U-7							
PCB156	3.6E-01	U	1.6E-01	U	2.0E-01	U	8.9E-02	U							
PCB157	3.2E-01	U	1.4E-01	U	1.8E-01	U	8.0E-02	U							
PCB169	1.0E+00	U	4.5E-01	U	5.6E-01	U	2.5E-01	U							
PCB170	7.0E-01		2.5E-01	J-11	2.0E-01	U	8.9E-02	U							
PCB180	5.8E-01	U-7	2.1E-01	U-7	1.9E-01	J-11	6.2E-01								
PCB189	4.6E-01	U	2.0E-01	U	2.5E-01	U	1.1E-01	U							
PCB77	4.5E-01	U	2.0E-01	U	2.5E-01	U	1.1E-01	U							
Total PCBs (calc)	1.7E+01		5.2E+00		3.6E+00		5.2E+00								
Total PCTs	5.2E+00	U	2.1E+00	J-11	5.5E+00	U	3.6E+00	U							

**APPENDIX B**

**DATA VALIDATION REPORT**



## **DATA VALIDATION REPORT DUWAMISH RIVER SEDIMENT STUDY**

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Contract number: 50-DSNC-7-90032  
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July 16, 1998

# DATA VALIDATION REPORT

## DUWAMISH RIVER SEDIMENT STUDY

### I. INTRODUCTION & SUMMARY

This data validation report summarizes results from a review of analytical data for 328 sediment samples collected by the Environmental Conservation Division of the Northwest Fisheries Science Center (ECD-NFSC) in the lower Duwamish River near Seattle, Washington. Sediment samples were collected between September and November of 1997. Analyses for total polychlorinated biphenyls (PCBs), 15 PCB congeners and total polychlorinated terphenyls (PCTs) were performed by the ECD-NFSC laboratory (Seattle, Washington). Analyses for total organic carbon and grain size were performed by Applied Marine Sciences, Inc. (League City, Texas). A list of samples reviewed is provided in **Table 1**.

### BASIS FOR DATA REVIEW

Data packages received from the laboratories consisted of a laboratory case narrative, sample results, and associated quality control (QC) information. Data were reviewed by EcoChem, Inc. using project and method-specific criteria as specified in the Quality Assurance Plan (ECD-NFSC, 1998) and general guidelines as presented in US EPA Functional Guidelines (US EPA, 1994). Results which did not meet the project criteria were qualified using the qualifier codes listed in **Table 2**.

### OVERALL ASSESSMENT

On the basis of this evaluation, the results from the analyses performed by the laboratories are acceptable for use. The laboratories followed the analytical methodologies as specified in the project QAP and the laboratory analytical procedures. A total of 9,574 analytical results were reported by the laboratories. No data points were rejected. The laboratory was unable to quantify 77 PCB congener results. Thus, the data set is over 99% complete.

Qualifications to the data added during the data validation process include:

- 196 selected PCB congener results were qualified as "non-detected" (U-7) due to the presence of the PCB congeners in the associated blanks
- 878 PCB congener results were qualified as estimated (J-10) due to a potential high bias from the presence of co-eluting compounds
- 139 results were qualified as estimated (J-11) because the value was less than the calculated method detection limit
- One sample result was qualified both J-10, and J-11, as co-eluting compounds were suspected and the reported value was less than the calculated detection limit.

The specific technical items assessed for each laboratory report, and data qualifications are summarized in the following two sections.

## **II. DATA REVIEW OF PCB AND PCT RESULTS**

Results from the analysis of 328 sediment samples were reviewed by EcoChem, Inc. The data summaries with related quality control results were provided by the ECD/National Marine Fisheries Services (NMFS) Laboratory, Seattle, Washington.

### **COMPLETENESS**

The laboratory followed the QAP requirements for QC sample frequency of analysis, acceptance criteria, and corrective action processes. All anomalies were discussed in the case narrative or in footnotes to the data. No data were rejected based on the validation process.

### **CUSTODY**

All samples were listed on the chain of custody (COC) forms. Twenty-four samples were listed on the COC, but were not analyzed. As documented in a memorandum (EcoChem, December 1997), these samples were associated with stations that did not meet sampling design criteria. Additional samples were collected on November 12, 1997 and November 13, 1997, and identified with an "R" at the end of the field sample ID.

For samples collected on September 19, 1997, the COC relinquish date (indicating transfer from sampler to the freezer) was incorrectly recorded as June 19, 1997. Custody was judged not to be compromised and no action was necessary.

A sample identified on the COC as DAC-EIT-10-01-P (collected on November 4, 1997) was incorrectly changed on the COC to DAC-WIT-10-01-P. The correct field ID was verified by use of the latitude and longitude coordinates, and also through review of sampling logs. The hardcopy and electronic results from the laboratory use the correct field ID.

### **TECHNICAL ASSESSMENT**

The quality control (QC) requirements that were reviewed are listed below.

- Initial Calibration
- Continuing Calibration
- \* Blanks (Method)
- Surrogate Compounds
- \* Standard Reference Materials
- Laboratory Replicates
- \* Target Analyte List
- \* Method Detection Limits (MDL) and Reported Detection Limits

Those items marked with an asterisk (\*) did not meet all specified QC criteria and are discussed below. QC items not marked with an asterisk meet all QC criteria.

### Blanks (Method)

Method blanks were analyzed at the required frequency. One or more PCB congeners were detected at low levels in several of the method blanks. The QAP acceptance criterion (no more than four target compound results with a concentration greater than four times the method detection limit can be present in a blank) was met for all method blanks.

To account for the potential effect of low-level contamination, validation action levels were established at 5 times the concentration detected in the method blank. All associated sample results that were less than the action levels were qualified as not detected (U-7) at the reported concentrations, thus elevating the stated detection limit.

### Standard Reference Material

Thirty-eight replicate standard reference material (SRM) samples were prepared and analyzed, using National Institute of Standards and Technology (NIST) SRM 1944. Certified values were provided by NIST for the PCB congeners except congener numbers 77, 126, 157, 169, and 189.

For three certified compounds (PCB congeners 101, 128, and 153) all recovery values were greater than the upper control limit. Four recovery values were greater than the control limit for PCB congener 105. According to the laboratory's footnote, the elevated recoveries were due to co-elutions that could not be resolved by the HPLC/PDA analysis. As this indicates that a potential high bias exists for these compounds, all associated positive results for these congeners are estimated (J-10). All other recoveries for certified compounds were acceptable.

### Method Detection Limits and Reported Detection Limits

The laboratory calculated method detection limits (MDL) according to Appendix B of 40 CFR, Part 136. For PCBs, the calculated MDL values were less than the target detection limit (4 ng/g) listed in the QAP. For PCTs, the calculated MDL value was greater than the target detection limit (4 ng/g) at 8.15 ng/g.

For analytes that were not detected, the laboratory did not report the MDL, but calculated a sample-specific reporting limit based upon the response of the lowest standard and the sample weight. This resulted in values reported at concentrations less than the MDL.

If the reported positive result was less than the calculated MDL, the result was qualified as J-11.

### Target Analyte List

Seventy-seven results for individual PCB congeners were not reported due to analytical interferences with co-eluting PCTs. The laboratory reported a "NR" in the results field for these congeners.

### **III. DATA REVIEW OF TOC AND GRAIN SIZE**

Results from the analysis of 352 sediment samples for total organic carbon (TOC) and grain size were reviewed by EcoChem, Inc. The data summaries with related quality control results were provided by Applied Marine Sciences, League City, Texas.

#### **COMPLETENESS**

The laboratory followed the QAP requirements for QC sample frequency of analysis, acceptance criteria, and corrective action processes. All anomalies were discussed in the case narrative or in footnotes to the data. No data were rejected based on the validation process.

#### **CUSTODY**

Field chain-of-custody forms (COCs) were present and complete. All forms were signed and dated. No problems with sample receipt conditions were indicated on the field COCs, and all samples listed on the COCs were analyzed.

#### **TECHNICAL ASSESSMENT**

The quality control (QC) requirements that were reviewed are listed below.

- Technical Holding Times
- Blanks (Method)
- Calibration
- Standard Reference Material (SRM)
- \* Laboratory Replicates
- Reporting Limits

Those items marked with an asterisk (\*) did not meet all specified QC criteria and are discussed below. QC items not marked with an asterisk meet all QC criteria.

#### Laboratory Replicates

Laboratory replicate analyses were performed on a selected sample from each batch of analyses. Precision was within the specified 35% relative percent difference (RPD) control limit for the replicate analyses except for two sets of duplicates for gravel. The percent gravel in these samples were very low. (Results for Sample DAC-EST19-04 were 0.04% and 0.13% gravel, and for Sample DAC-EST12-09 were 0.02% and 0.05% gravel.) Thus, no qualifiers were assigned to the data.

## REFERENCES

- Environmental Conservation Division, Northwest Fisheries Science Center. 1998. Duwamish River Sediment Study Quality Assurance Project Plan. National Oceanic and Atmospheric Administration. Seattle, Washington. January, 1998.
- Environmental Conservation Division, Northwest Fisheries Science Center. 1997. Duwamish River Sediment Study Sampling and Analysis Plan. National Oceanic and Atmospheric Administration. Seattle, Washington. September, 1997.
- Krone, C. and P. Robisch. 1994. Standard Operating Procedures for Hylebos Sediments from Sampling and Analytical Methods of the National Status and Trends Program, National Benthic Descriptions of Elemental Analytical Methods, NOAA Technical Memorandum NOS ORCA 71, G.G. Lauenstein and A.Y. Cantillo, Editors, Silver Springs, Maryland, July 1993.
- Puget Sound Estuary Program. 1997. Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound. Prepared for U.S. Environmental Protection Agency. April, 1997.
- Sloan, C. A., N. G. Adams, R. W. Pearce, D. W. Brown, and S-L. Chan. 1993. Northwest Fisheries Science Center Organic Analytical Procedures. National Oceanic and Atmospheric Administration/National Marine Fisheries Service and Northwest Fisheries Science Center. Seattle, Washington.
- Sweet, S. T., J. M. Wong, J. M. Brooks, and T. L. Wade. 1994. Sediment Grain Size Analyses for NOAA National Status and Trends Mussel Watch Project. Geochemical and Environmental Research Group, Texas A&M University.
- US Environmental Protection Agency. 1994. National Functional Guidelines for Organic Data Review. EPA-540/R94/012. Washington, D.C.

**Table 1**  
**SAMPLE LIST**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-CH01-01	10/20/97	117-697	1799
DAC-CH01-02	10/09/97	117-412	1715
DAC-CH01-03	10/09/97	117-643	1716
DAC-CH01-04	10/20/97	117-421	1798
DAC-CH02-01	10/09/97	117-427	1717
DAC-CH02-02-R	11/12/97	117-420	1665
DAC-CH02-03	10/09/97	117-428	1718
DAC-CH03-01	10/15/97	117-425	1755
DAC-CH03-02	10/15/97	117-424	1756
DAC-CH03-03	10/15/97	117-423	1757
DAC-CH03-04	10/15/97	117-422	1758
DAC-CH04-01	10/15/97	117-215	1754
DAC-CH04-02	10/10/97	117-214	1722
DAC-CH04-03	10/10/97	117-218	1723
DAC-CH04-04-R	11/13/97	117-310	1864
DAC-CH05-01	10/15/97	117-426	1753
DAC-CH05-02	10/20/97	117-442	1801
DAC-CH06-01	10/24/97	117-624	1829
DAC-CH06-02	10/15/97	117-619	1751
DAC-CH06-03	10/15/97	117-620	1752
DAC-CH07-01	10/16/97	117-622	1775
DAC-CH07-02	10/14/97	117-615	1744
DAC-CH07-03	10/14/97	117-618	1745
DAC-CH08-01	10/16/97	117-621	1764
DAC-CH08-02	10/16/97	117-629	1765
DAC-CH09-01	10/16/97	117-631	1777
DAC-CH09-02	10/16/97	117-630	1776
DAC-CH09-03	10/16/97	117-628	1763
DAC-CH10-01	10/16/97	117-632	1778
DAC-CH10-02	10/17/97	117-633	1783
DAC-CH11-01	10/17/97	117-636	1786
DAC-CH11-02	10/17/97	117-635	1785

Field\_ID = Identification assigned to the samples in the field.  
 NMFS\_ID = Identification assigned to the samples by the NMFS laboratory.  
 AMS\_ID = Identification assigned to the samples by the AMS Laboratory.

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-CH11-03	10/17/97	117-650	1784
DAC-CH12-01-2	10/24/97	117-637	1828
DAC-CH12-02	10/17/97	117-646	1787
DAC-CH13-01	10/24/97	117-648	1827
DAC-CH13-02	10/17/97	117-645	1782
DAC-CH13-03	10/17/97	117-644	1781
DAC-EIT01-01	09/30/97	117-676	1654
DAC-EIT01-02	09/30/97	117-677	1655
DAC-EIT02-01	10/14/97	117-277	1733
DAC-EIT02-02	10/14/97	117-278	1734
DAC-EIT02-04	10/14/97	117-279	1735
DAC-EIT03-01	11/13/97	117-266	1985
DAC-EIT03-02	09/29/97	117-268	1624
DAC-EIT03-03	11/13/97	117-267	1871
DAC-EIT03-04	09/29/97	117-264	1625
DAC-EIT04-01	11/13/97	117-486	1872
DAC-EIT04-02	11/13/97	117-485	1873
DAC-EIT04-03	10/16/97	117-487	1769
DAC-EIT05-01	09/29/97	117-344	1626
DAC-EIT05-02	09/26/97	117-671	1616
DAC-EIT06-01	09/26/97	117-229	1617
DAC-EIT06-02	09/29/97	117-234	1627
DAC-EIT06-03	09/29/97	117-228	1628
DAC-EIT07-01	09/26/97	117-186	1618
DAC-EIT07-02-1	11/12/97	117-217	1859
DAC-EIT07-03	09/26/97	117-188	1619
DAC-EIT07-04	09/26/97	117-187	1620
DAC-EIT07-05-2	11/12/97	117-280	1858
DAC-EIT08-01-R	11/12/97	117-296	1852
DAC-EIT08-02	09/26/97	117-190	1622
DAC-EIT08-03	09/26/97	117-189	1623
DAC-EIT09-01	11/03/97	117-439	1834
DAC-EIT09-02	11/03/97	117-437	1833
DAC-EIT09-03	10/17/97	117-440	1779
DAC-EIT09-04	10/16/97	117-434	1774

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-EIT10-01	11/04/97	117-459	1839
DAC-EIT10-02	10/17/97	117-462	1780
DAC-EIT11-01-2	11/12/97	117-473	1855
DAC-EIT11-02	09/19/97	117-479	1573
DAC-EIT11-03	09/19/97	117-478	1574
DAC-EIT12-01	09/19/97	117-508	1575
DAC-EIT12-02-5	11/12/97	117-505	1854
DAC-EIT13-01	09/18/97	117-516	1552
DAC-EIT13-02	09/18/97	117-512	1553
DAC-EIT13-03	09/18/97	117-513	1561
DAC-EIT14-01	09/18/97	117-532	1562
DAC-EIT14-02	09/19/97	117-529	1576
DAC-EITUPRVR01	09/30/97	117-297	1656
DAC-EITUPRVR02	09/30/97	117-299	1657
DAC-EST01-01	10/14/97	117-282	1741
DAC-EST01-02	10/14/97	117-283	1742
DAC-EST01-03	10/14/97	117-284	1743
DAC-EST01-04	10/15/97	117-292	1748
DAC-EST02-02	10/14/97	117-281	1740
DAC-EST02-03	10/15/97	117-285	1761
DAC-EST03-01-R	11/12/97	117-303	1842
DAC-EST03-02-1	10/23/97	117-286	1823
DAC-EST03-03-R	11/12/97	117-317	1843
DAC-EST03-04	10/14/97	117-271	1739
DAC-EST03-05-R	11/12/97	117-316	1844
DAC-EST04-01	09/30/97	117-270	1644
DAC-EST04-02	10/08/97	117-265	1711
DAC-EST04-03	09/30/97	117-272	1645
DAC-EST04-04	09/30/97	117-269	1646
DAC-EST04-05-R	11/12/97	117-312	1845
DAC-EST05-01	09/30/97	117-488	1647
DAC-EST05-02-R	11/12/97	117-305	1846
DAC-EST06-01	09/26/97	117-493	1609
DAC-EST06-02	09/26/97	117-492	1610
DAC-EST06-03	09/29/97	117-491	1629

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-EST06-04	10/21/97	117-490	1807
DAC-EST06-05-R	11/12/97	117-313	1847
DAC-EST06-06	09/30/97	117-489	1641
DAC-EST06-07	09/29/97	117-238	1631
DAC-EST06-08	09/30/97	117-311	1642
DAC-EST07-01	09/29/97	117-239	1632
DAC-EST07-02	09/29/97	117-246	1633
DAC-EST07-03	09/29/97	117-240	1634
DAC-EST07-04	09/29/97	117-242	1635
DAC-EST07-05	09/29/97	117-245	1636
DAC-EST07-06	10/21/97	117-247	1806
DAC-EST07-07-R	11/12/97	117-308	1848
DAC-EST07-08	09/26/97	117-244	1612
DAC-EST08-01	10/15/97	117-668	1760
DAC-EST08-02	10/15/97	117-669	1762
DAC-EST08-03	09/26/97	117-670	1613
DAC-EST09-01	09/25/97	117-233	1606
DAC-EST09-02	10/24/97	117-227	1831
DAC-EST09-03	09/25/97	117-232	1607
DAC-EST09-04	09/25/97	117-226	1608
DAC-EST09-05	09/26/97	117-231	1614
DAC-EST09-06	09/26/97	117-243	1615
DAC-EST10-01	09/25/97	117-225	1604
DAC-EST10-02-R	11/12/97	117-306	1849
DAC-EST11-01-R	11/13/97	117-307	1865
DAC-EST11-02	10/21/97	117-230	1802
DAC-EST11-03	09/24/97	117-181	1594
DAC-EST11-04	09/24/97	117-174	1595
DAC-EST11-05	09/24/97	117-173	1596
DAC-EST11-06	09/24/97	117-178	1597
DAC-EST11-07	09/24/97	117-176	1598
DAC-EST11-08	09/24/97	117-175	1599
DAC-EST11-09	09/24/97	117-177	1600
DAC-EST11-10	09/25/97	117-179	1601
DAC-EST11-11-R	11/13/97	117-304	1868

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-EST11-12	09/25/97	117-180	1603
DAC-EST12-01	09/22/97	117-191	1577
DAC-EST12-02	09/22/97	117-192	1578
DAC-EST12-03	09/22/97	117-193	1579
DAC-EST12-04	09/22/97	117-205	1580
DAC-EST12-05	09/22/97	117-201	1581
DAC-EST12-06	09/30/97	117-204	1640
DAC-EST12-07-1	10/07/97	117-216	1704
DAC-EST12-08-1	09/23/97	117-208	1584
DAC-EST12-09	09/22/97	117-199	1582
DAC-EST12-10	09/22/97	117-200	1583
DAC-EST13-01	10/22/97	117-435	1813
DAC-EST13-02	10/22/97	117-438	1814
DAC-EST13-03	10/07/97	117-436	1705
DAC-EST13-04	10/06/97	117-433	1700
DAC-EST13-05	10/06/97	117-452	1701
DAC-EST13-06	10/07/97	117-449	1706
DAC-EST14-01-R	11/13/97	117-455	1861
DAC-EST14-02	10/20/97	117-453	1794
DAC-EST14-03-1	10/22/97	117-447	1815
DAC-EST14-04	10/20/97	117-448	1795
DAC-EST14-05	10/20/97	117-454	1796
DAC-EST15-01	10/10/97	117-451	1724
DAC-EST15-02	10/17/97	117-446	1788
DAC-EST15-03	10/17/97	117-450	1789
DAC-EST16-01	10/16/97	117-464	1767
DAC-EST16-02	10/22/97	117-461	1816
DAC-EST16-03	10/16/97	117-463	1768
DAC-EST16-04	10/10/97	117-467	1721
DAC-EST16-05	10/14/97	117-465	1738
DAC-EST17-01	10/14/97	117-466	1737
DAC-EST17-02-2	10/22/97	117-460	1817
DAC-EST18-01	10/07/97	117-468	1707
DAC-EST18-02-R	11/13/97	117-472	1860
DAC-EST18-03	10/07/97	117-475	1709

**Table 1  
(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-EST18-04	10/06/97	117-476	1702
DAC-EST19-01	09/17/97	117-480	1548
DAC-EST19-02	09/17/97	117-481	1549
DAC-EST19-03-1	10/23/97	117-474	1820
DAC-EST19-04	09/16/97	117-501	1542
DAC-EST19-05	09/19/97	117-477	1571
DAC-EST19-06	10/07/97	117-506	1710
DAC-EST20-01	09/17/97	117-498	1545
DAC-EST20-02	09/17/97	117-499	1546
DAC-EST20-03	09/17/97	117-502	1547
DAC-EST20-04	10/22/97	117-504	1819
DAC-EST20-05	10/14/97	117-500	1736
DAC-EST20-06	09/17/97	117-519	1544
DAC-EST21-01	10/14/97	117-511	1732
DAC-EST21-02	09/16/97	117-520	1543
DAC-EST21-03	09/17/97	117-517	1550
DAC-EST21-04	09/17/97	117-518	1551
DAC-EST22-01	09/18/97	117-530	1563
DAC-EST22-02	09/18/97	117-531	1564
DAC-EST22-03	09/18/97	117-533	1565
DAC-EST22-04	10/14/97	117-525	1731
DAC-EST23-01	10/24/97	117-524	1826
DAC-EST23-02	10/06/97	117-528	1703
DAC-EST23-03	09/19/97	117-541	1566
DAC-EST23-04	09/19/97	117-542	1567
DAC-EST23-05	09/19/97	117-543	1568
DAC-EST23-06	09/19/97	117-700	1569
DAC-ESTUPVR01	10/15/97	117-298	1749
DAC-WEST01	09/24/97	117-220	1591
DAC-WEST02	09/24/97	117-212	1592
DAC-WEST03	09/23/97	117-203	1585
DAC-WEST04	09/23/97	117-206	1586
DAC-WEST05	09/23/97	117-207	1587
DAC-WEST06	09/23/97	117-416	1588
DAC-WEST07	09/23/97	117-213	1589

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-WEST08	09/23/97	117-219	1590
DAC-WIT01-01	09/30/97	117-290	1649
DAC-WIT01-02	09/30/97	117-291	1650
DAC-WIT01-03	09/30/97	117-293	1651
DAC-WIT01-04	09/30/97	117-294	1652
DAC-WIT01-05	09/30/97	117-295	1653
DAC-WIT02-01	10/01/97	117-322	1666
DAC-WIT02-02	10/02/97	117-319	1673
DAC-WIT03-01	10/01/97	117-321	1667
DAC-WIT03-02	10/01/97	117-320	1668
DAC-WIT03-03	09/29/97	117-323	1637
DAC-WIT03-04	09/29/97	117-324	1638
DAC-WIT03-05	10/17/97	117-318	1792
DAC-WIT03-06	09/29/97	117-338	1639
DAC-WIT04-01	11/13/97	117-672	1870
DAC-WIT04-02	10/02/97	117-673	1674
DAC-WIT05-01	10/01/97	117-376	1669
DAC-WIT05-02	10/01/97	117-375	1670
DAC-WIT05-03	10/01/97	117-374	1671
DAC-WIT05-04	10/01/97	117-377	1672
DAC-WIT06-01	10/16/97	117-337	1770
DAC-WIT06-02	10/16/97	117-333	1771
DAC-WIT06-03	10/02/97	117-330	1675
DAC-WIT07-01	10/16/97	117-698	1772
DAC-WIT07-02	10/16/97	117-335	1773
DAC-WIT07-03	10/14/97	117-331	1747
DAC-WIT08-01	11/04/97	117-402	1835
DAC-WIT08-02	11/04/97	117-400	1836
DAC-WIT08-03	10/03/97	117-395	1693
DAC-WIT08-04	11/04/97	117-399	1837
DAC-WIT08-05	11/13/97	117-394	1869
DAC-WIT08-06	11/04/97	117-397	1838
DAC-WIT09-01-R5	11/12/97	117-611	1857
DAC-WIT09-02	10/03/97	117-602	1694
DAC-WIT10-01	11/12/97	117-608	1856

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-WIT10-02	10/17/97	117-605	1791
DAC-WIT11-01	10/03/97	117-596	1696
DAC-WIT11-02	10/03/97	117-595	1697
DAC-WIT12-01-R	11/12/97	117-576	1853
DAC-WIT12-02	09/16/97	117-566	1532
DAC-WIT12-03	09/15/97	117-565	1523
DAC-WIT12-04	09/15/97	117-572	1524
DAC-WIT12-05	09/15/97	117-579	1525
DAC-WIT12-06	09/15/97	117-580	1526
DAC-WIT12-07	09/16/97	117-584	1533
DAC-WIT12-08	09/16/97	117-583	1534
DAC-WIT13-01	09/16/97	117-559	1535
DAC-WIT13-02	09/18/97	117-553	1559
DAC-WIT13-03	09/16/97	117-558	1536
DAC-WIT13-04	09/16/97	117-557	1537
DAC-WIT13-05	09/18/97	117-552	1560
DAC-WIT13-06	09/19/97	117-551	1572
DAC-WIT14-01	10/17/97	117-537	1790
DAC-WIT14-02	10/14/97	117-538	1746
DAC-WST01-01	10/08/97	117-674	1712
DAC-WST01-02	10/20/97	117-675	1797
DAC-WST02-01	10/01/97	117-373	1658
DAC-WST02-02	10/23/97	117-368	1824
DAC-WST03-01	10/21/97	117-370	1808
DAC-WST03-02	10/21/97	117-369	1809
DAC-WST03-03	10/21/97	117-371	1810
DAC-WST04-01	10/01/97	117-381	1659
DAC-WST04-02	10/01/97	117-386	1660
DAC-WST04-03-R	11/13/97	117-389	1867
DAC-WST05-01-R	11/13/97	117-384	1866
DAC-WST05-02-1	10/23/97	117-382	1825
DAC-WST06-01	10/20/97	117-383	1800
DAC-WST06-02	10/01/97	117-385	1663
DAC-WST07-01-R	11/12/97	117-334	1851
DAC-WST07-02	10/01/97	117-332	1664

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-WST07-03	10/15/97	117-336	1759
DAC-WST08-01	10/02/97	117-349	1677
DAC-WST08-02	10/02/97	117-345	1678
DAC-WST08-03	10/02/97	117-351	1679
DAC-WST08-04	10/02/97	117-348	1680
DAC-WST09-01	10/21/97	117-390	1804
DAC-WST09-02	10/21/97	117-695	1803
DAC-WST10-01	10/03/97	117-398	1684
DAC-WST10-02	10/03/97	117-396	1685
DAC-WST10-03-R	11/12/97	117-408	1841
DAC-WST10-04	10/03/97	117-401	1687
DAC-WST10-05	10/03/97	117-403	1688
DAC-WST10-06	10/03/97	117-641	1689
DAC-WST10-07	10/03/97	117-414	1690
DAC-WST10-08	10/03/97	117-642	1691
DAC-WST11-01-R2	11/13/97	117-407	1863
DAC-WST11-02	10/24/97	117-649	1830
DAC-WST11-03-1	10/24/97	117-409	1832
DAC-WST12-01	10/22/97	117-607	1811
DAC-WST12-02	10/22/97	117-623	1812
DAC-WST13-01	10/10/97	117-604	1726
DAC-WST13-02-R	11/13/97	117-610	1862
DAC-WST13-03	10/21/97	117-606	1805
DAC-WST14-01-2	10/23/97	117-589	1822
DAC-WST14-02	10/10/97	117-603	1725
DAC-WST15-01	10/09/97	117-593	1713
DAC-WST15-02	10/09/97	117-592	1714
DAC-WST15-03	10/06/97	117-594	1698
DAC-WST16-01	10/16/97	117-342	1766
DAC-WST16-02-1	10/23/97	117-347	1821
DAC-WST17-01	10/22/97	117-343	1818
DAC-WST17-02	10/06/97	117-350	1699
DAC-WST18-01	09/16/97	117-582	1539
DAC-WST18-02	09/16/97	117-581	1540
DAC-WST18-03	09/16/97	117-597	1541

**Table 1**  
**(Continued)**

Field_ID	Collected	NMFS_ID	AMS_ID
DAC-WST18-04	10/10/97	117-591	1720
DAC-WST18-05	10/10/97	117-590	1728
DAC-WST19-01-R	11/12/97	117-563	1840
DAC-WST19-02	09/18/97	117-554	1555
DAC-WST19-03	09/15/97	117-570	1527
DAC-WST19-04	09/15/97	117-571	1528
DAC-WST19-05	09/15/97	117-569	1529
DAC-WST19-06	09/18/97	117-564	1556
DAC-WST20-01	09/15/97	117-585	1530
DAC-WST20-02	09/19/97	117-577	1570
DAC-WST20-03	09/16/97	117-578	1538
DAC-WST21-01	09/18/97	117-545	1557
DAC-WST21-02	09/18/97	117-546	1558
DAC-WST21-03	10/15/97	117-550	1750
DAC-WST22-01	10/14/97	117-540	1729
DAC-WST22-02	10/14/97	117-539	1730

**Table 2**  
**DATA VALIDATION QUALIFIER CODES**

**Validation Qualifiers**

U	Analyte concentration is not significantly above the associated blank result. The result is judged to be the detection limit.
R	Unreliable result. Data should not be used.
J	Reported concentration may not be accurate or precise, as judged by associated calibration and/or reference material results
UJ	Not detected. Detection limit may be inaccurate or imprecise, as judged by the associated quality control results.

**Reason Codes**

7	Analyte was determined "not detected" due to method blank results - Action levels were established at 5 times the concentration detected in the associated method blank. Congener results that were less than the action level were qualified as not detected (U-7) at the reported concentrations.
10	Estimated value due to Standard Reference material (SRM) results - An SRM was analyzed with each batch of samples. If the SRM results did not meet the quality control criteria specified in the QAPP, the associated sample results were qualified.
11	Estimated value because the reported result is less than the calculated Method Detection Limit (MDL). MDLs were established based on procedures described in 40CFR Part 136 Appendix B. If the analyst reported a positive result less than this limit, the result was reported and estimated.

**APPENDIX C**

**RECTIFICATIONS TO STATION LOCATIONS**

**WITH RESPECT TO SAMPLING REGIONS**

**Table C-1**

**SAMPLES COLLECTED WITHIN THE INTENDED SUB-STRATA BUT OUTSIDE OF THE TARGETED SAMPLING SEGMENT WITHIN THE SUB-STRATA<sup>(1)</sup>**

Sample ID	Sampling Segment
DAC-EIT04-01	DAC-EIT04-02
DAC-EIT07-05-2	DAC-EIT07-04
DAC-EIT08-02	DAC-EIT08-01
DAC-EIT12-02-05	DAC-EIT12-01
DAC-EST02-02	DAC-EST02-03
DAC-EST03-04	DAC-EST03-03
DAC-EST04-04	DAC-EST04-05
DAC-EST06-07	DAC-EST06-08
DAC-EST06-08	DAC-EST06-07
DAC-EST07-03	DAC-EST07-04
DAC-EST09-01	DAC-EST09-02
DAC-EST11-02	DAC-EST11-03
DAC-EST11-03	DAC-EST11-04
DAC-EST11-04	DAC-EST11-05
DAC-EST11-05	DAC-EST11-07
DAC-EST11-06	DAC-EST11-08
DAC-EST11-07	DAC-EST11-09
DAC-EST11-08	DAC-EST11-10
DAC-EST12-05	DAC-EST12-04
DAC-EST12-06	DAC-EST12-05
DAC-EST12-08-01	DAC-EST12-09
DAC-EST12-09	DAC-EST12-10
DAC-EST17-02-02	DAC-EST17-01
DAC-EST19-06	DAC-EST19-05
DAC-EST20-06	DAC-EST20-04
DAC-WIT06-06	DAC-WIT06-05
DAC-WIT12-05	DAC-WIT12-04
DAC-WIT13-04	DAC-WIT13-05
DAC-WIT13-05	DAC-WIT13-06
DAC-WST08-02	DAC-WST08-03
DAC-WST10-02	DAC-WST10-03
DAC-WST10-04	DAC-WST10-05

<sup>(1)</sup> Each sub-stratum was divided into equally weighted areas (sampling segments) for randomly generated sample locations

Of the 10 percent of samples in a nearby sampling segment but within the same targeted sub-stratum, some still result in one sample per sampling segment (e.g., a series of sampling locations that is shifted one sampling segment over). That subset of samples in nearby sampling segments will still meet study design objectives for sampling locations. In addition, of the 15 percent of samples collected outside the intended sampling segments, some are only marginally outside of the targeted sampling segments (e.g., within 20 feet).

**Table C-2**

**SAMPLES COLLECTED OUTSIDE  
OF THE TARGETED SUB-STRATA**

<b>Sample ID</b>	<b>Sampling Segment</b>
DAC-EIT01-01	DAC-EST01-04
DAC-EIT01-02	DAC-EST01-04
DAC-EIT03-03	DAC-EST04-02
DAC-EIT12-01	DAC-EST19-01
DAC-EIT13-01	DAC-EST21-01
DAC-EITUPRV01	DAC-ESTUPRV01
DAC-EST04-02	DAC-CH01-03 or DAC-CH01-04*
DAC-EST09-04	DAC-EIT06-03
DAC-EST11-10	DAC-CH03-03
DAC-EST11-12	DAC-EST10-01 or DAC-CH03-04*
DAC-WIT01-05	DAC-EST01-04
DAC-WIT04-01	DAC-WST02-01
DAC-WST11-03-1	DAC-CH04-01
DAC-WST16-01	DAC-CH08-02

\* Sample was collected at the boundary between the two sampling segments listed.